
COMMUNICATIONS EQUIPMENT MODIFICATION NOTE 38, REVISION A, ERRATA 3

(for Electronics Technicians)

Maintenance, Logistics, and Acquisition Division

W/OPS12: GSS

SUBJECT: Console Replacement System (CRS) Output Channel Expansion

PURPOSE: To expand the capabilities of the CRS system from a Large 7-channel to a Maximum 9-channel configuration.

SITES AFFECTED:

| Site Name | SID | Org. Code |
|------------------|-----|-----------|
| WFO Billings, MT | BYZ | WT9677 |

EQUIPMENT AFFECTED: CRS (B440)

PARTS REQUIRED: The parts required are issued to each site by W/OPS12 from the National Logistics Support Center under the applicable approved site-specific Request for Change.

- (1) Front-end processor (FEP) hold down strap (ASN: B440-STRAP)
- (1) FEP computer (ASN: B440-2A2)
- (1) FEP hard disk drive (HDD) (ASN: B440-2A2A8-FEP)
- (1) Local area network (LAN) board (ASN: B440-1A8A10)
- (1) LAN cable segment (ASN: B440-2W1)
- (1) BNC tee connector (ASN: B440-4J1)
- (1) FEP switch VGA video cable (ASN: B440-2W3)
- (1) FEP switch PS/2 keyboard cable (ASN: B440-2W4)
- (1) DECtalk card (ASN: B440-2A2A11)
- (2) Audio switch module (ASM) cards (ASN: B440-2A6A3)
- (2) DECtalk-ASM audio cables (ASN: B440-4W12)
- (1) NOAA Weather Radio Specific Area Message Encoder (NWRSAME)-audio control panel (ACP) interface cables (ASN: B440-1A5W4)
- (1) DOS formatted diskette with CRS test database ASCII files (provided by W/OPS12)

PARTS SUPPLIED BY THE SITE:

- (2) Transmitter audio output cables
- (3) NWRSAMEs (if available)
- Cable marking tags and tie-wraps, as needed

TOOLS AND TEST EQUIPMENT REQUIRED:

- #1 and #2 Phillips screwdrivers
- CRS test database ASCII files diskette provided by W/OPS12 (see Parts Required)
- Small flat-blade jeweler's screwdriver
- Root mean square (RMS) voltmeter/dB meter
- 600-ohm dummy load with a RJ-11 plug attached
- Antistatic workstation kit
- AM-48 Test Set

TIME REQUIRED: 3 Hours

| | |
|---------------------------------------|---|
| EFFECT ON OTHER INSTRUCTIONS: | Modification Note 38, Revision A, Errata 3 adds WFO BYZ to the list of sites affected. Modification Note 38, Revision A, Errata 3 supersedes previously released Modification Note 38, Revision A, Errata 2. |
| AUTHORIZATION VERIFICATION STATEMENT: | The authority for these modifications are Requests for Change AC356 and AB400. This procedure was tested and verified at National Weather Service Headquarters, Silver Spring, MD (SLVM2). |
| GENERAL: | The attachments to this procedure provide the instructions to add output channel(s). |
| PROCEDURE: | Attachment A provides procedures for implementing this modification. Attachment B (CRS Hardware Drawings) provides reference information. Attachment C provides verification of the new physical configuration (used before applying power). Attachment D provides a completed sample of an Engineering Management Reporting System (EMRS) report. |
| REPORTING INSTRUCTIONS: | Report the completed modification using EMRS according to the instructions in the NWS Instruction 30-2104, Maintenance Documentation, Part 4 and Appendix G. Include the following information on the EMRS report. a. Block 7. Equipment Code: CRSSA b. Block 8. Serial Number: 001 c. Block 13. ASN and Serial Number of the new FEP d. Block 17a. Mod No. 38A A sample EMRS report is provided as attachment D . |

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Attachment **A** - Modification Procedure

Attachment **B** - CRS Hardware Drawings

Attachment **C** - New Configuration Physical Verification

Attachment **D** - EMRS Report Sample

ATTACHMENT A

Modification Procedure

Overview

This modification note provides instructions for expanding a Console Replacement System (CRS) from a Large 7-channel configuration to a Maximum 9-channel configuration. The Modification Procedure contains seven parts:

1. CRS Power-Down Procedures
2. Equipment Upgrade Procedures
3. CRS Power-Up Procedures
4. CRS Login and Test Database ASCII File Loading Procedures
5. Post Hardware Expansion Channel Operability Verification Procedures
6. Adding New Transmitter Channels and Editing Site Database ASCII File Procedures
7. CRS Alignment Procedures

NOTE: 1. Read the entire procedure, and verify receipt of all required parts before proceeding with the actual modification.

2. Coordinate with the operations staff before performing this procedure.

CAUTION

CRS must be down to perform the expansion modification. This modification contains test messages that should not be broadcasted on any transmitter.

In addition, the site database ASCII file will be recompiled, and all dictionary files will be lost! Switch to the backup NWR system, and ensure the dictionary files are backed up (see the *CRS Administration Manual*) before performing this modification.

NOTE: The new 3FEP setup procedures in part 2, sections 2.1 and 2.2, can be performed prior to shutting down the system. This saves downtime for the current CRS operational system.

PART 1 - CRS POWER-DOWN PROCEDURES

1.1 CRS Application Shutdown

1. Click the **System** menu and **Stop System**.
2. Wait until all icons on the *CRS System Status* menu turn **red**.

1.2 UNIX Shutdown

NOTE: CRS application shutdown is to precede the graceful power-down. After exiting the CRS application software, implement a “controlled/orderly UNIX shutdown with NO automatic reboot” on the main processor (MP), and implement a “controlled/orderly UNIX shutdown” on all FEPs. Upon completion of the controlled/orderly UNIX shutdown, power-down the processors in the following order: MPs first, followed by the FEPs.

1. Click the **Maintenance** menu in the main CRS menu to access the *Maintenance* pull-down menu.
2. Click **UNIX Shell** in the *Maintenance* pull-down menu. A *UNIX xterm* window pops up for the entry of UNIX commands.
3. Type the following UNIX command in the *xterm* window:
su root
4. Press the **Enter** key. The shell responds with a prompt to enter root passwords.
5. Type the password for the root.
6. Press the **Enter** key. The shell prompt changes to a pound sign indicating that all subsequent UNIX command entries have root authority.
7. Type the following UNIX command in the *xterm* window:
rsh 5MP /sbin/shutdown -i0 -g0 -y
8. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 5MP. UNIX on processor 5MP shuts down.
9. Type the following UNIX command in the *xterm* window:
rsh 1FEP /sbin/shutdown -i0 -g0 -y
10. Press the **Enter** key. The shell command prompt returns, after displaying a confirmation of shutdown initiation on 1FEP. UNIX on processor 1FEP shuts down.
11. Type the following UNIX command in the *xterm* window:
rsh 2FEP /sbin/shutdown -i0 -g0 -y
12. Press the **Enter** key. The shell command prompt returns, after displaying a confirmation of shutdown initiation on 2FEP. UNIX on processor 2FEP shuts down.

13. Type the following UNIX command in the *xterm* window:
rsh 4BKUP /sbin/shutdown -i0 -g0 -y
14. Press the **Enter** key. The shell command prompt returns, after displaying a confirmation of shutdown initiation on 4BKUP. The UNIX on processor 4BKUP shuts down.
15. Type the following UNIX command in the *xterm* window:
cd /
16. Press the **Enter** key.
17. Type **/sbin/shutdown -i0 -g0 -y**.
18. Press the **Enter** key. Each CRS processor for the system may be safely powered-down when UNIX indicates shutdown is complete with the message:
Press any key to reboot.... **Do not reboot** any machines; go to section 1.3.

1.3 CRS Hardware Power-down

Power-down all CRS equipment at the operator's station and in the equipment room by turning off the following equipment:

| Operator's Station | Equipment Room |
|---------------------------|-----------------------|
|---------------------------|-----------------------|

| | |
|-----------------|-------|
| 0MP and monitor | 4BKUP |
|-----------------|-------|

| | |
|-----------------|------|
| 5MP and monitor | 1FEP |
|-----------------|------|

| | |
|---------------|------|
| NWRSAME (all) | 2FEP |
|---------------|------|

LAN bridge

LAN server

Monitor

Printer

Audio switching assembly (ASA) power supplies

Modem

PART 2 - EQUIPMENT UPGRADE PROCEDURES

NOTE: The new 3FEP setup procedures in part 2, sections 2.1 and 2.2, can be performed prior to shutting down the system. This will save downtime for the current operational CRS.

2.1 New 3FEP LAN Board and Hard Drive Installation

CAUTION

Removing and replacing circuit cards must be accomplished in an antistatic work area using approved antistatic procedures. Refer to attachment C and ensure all equipment cabling is properly marked before removal.

1. Remove the right side cover of the new **3FEP** using the following procedure:
 - a. Remove the right three screws located on the back of the system unit (see attachment **B**, figure A-1). These screws secure the right side access panel of the system to the chassis.
 - b. Pull the panel backward while lifting it upward.
2. Remove the screws holding expansion slot covers 1 through 4 (see attachment **B**, figure A-13). Retain the screws for use in 1FEP and 4BKUP (see section 2.3, step 5).
3. Remove and retain the expansion slot covers for use in 1FEP and 4BKUP (see section 2.3, step 5).
4. Install the new LAN card in expansion slot number 1, and reinstall a retaining screw.

2.2 Installation of the Hard Disk Drive and Cage Combination

1. Align the three slides on the HDD cage with the three slots on the upper left corner of the chassis.
2. Insert the slides into the slots holding the HDD cage at an angle away from the chassis.
3. Slide the HDD cage toward the bottom of the chassis, and swing the HDD cage into the chassis body.
4. Align the two screw slots at the top with the threaded holes in the chassis, and secure the HDD cage with two screws.
5. Secure the HDD cage with a single screw at the tab located at the lower right corner of the HDD cage (see attachment **B**, figure A-13).

6. Hook up the HDD cable to the HDD. Cable connectors are keyed and only fit one way. Connect the other end of the HDD cable to the Small Computer Systems Interface (SCSI) port on the 3FEP motherboard.
7. Connect a power connector from the power supply to the HDD.

NOTE: Perform Part 1 - CRS Power-Down Procedures before proceeding.

2.3 1FEP and 4BKUP DECtalk Card Removal

CAUTION

Removing and replacing circuit cards must be accomplished in an antistatic work area, using approved antistatic procedures. Refer to attachment C and ensure all equipment cabling is properly marked before removal.

1. Remove all cabling from 1FEP and 4BKUP, and remove from the equipment rack to the antistatic work area (see attachment B, figure A-5).
2. Remove the right side covers of both the 1FEP and 4BKUP units using the following procedure:
 - a. Access the DECtalk cards by removing the right three screws located on the back of the system unit. These screws secure the right side access panel of the system to the chassis (see attachment B, figure A-1).
 - b. Pull the panel backward while lifting it upward.
3. On both 1FEP and 4BKUP, remove the screw that holds the slot 5 DECtalk cards in place.
4. Carefully remove the DECtalk cards from the expansion slots by placing your hands on the right and left edges of the card and pulling the card up out of the chassis.

NOTE: These two DECtalk cards will be placed in the new 3FEP.

5. Place one of the expansion slot covers removed from the new 3FEP in 1FEP and 4BKUP at expansion slot 5, using one of the removed screws.
6. Replace 1FEP and 4BKUP right side covers using the reverse procedure in step 2.
7. Replace 1FEP and 4BKUP in the CRS main unit cabinet.
8. Reconnect all cabling to 1FEP and 4BKUP, with the exception of the DECtalk to ASM and DECtalk to ASC audio cables.

2.4 DECTalk Card Configuration Installation for the Appropriate Input/Output (I/O) Address

NOTE: 1. Depending on the CRS site configuration, there may be as many as five DECTalk cards per FEP. In slots 2 through 6, DECTalk cards are identified as module numbers 0, 1, 2, 3, and 4.

1. Configure each DECTalk card removed above and the new DECTalk card for the appropriate I/O address, through switch 2 (SW2) as defined in table 1 and pictured in attachment **B**, figure A-11.

Table 1. DECTalk Card Switch 2 (SW2) Settings

| Module # | SW2-1 | SW2-2 | SW2-3 | SW2-4 | SW2-5 | SW2-6 | I/O Address | PC Slot |
|----------|-------|-------|-------|-------|-------|-------|-------------|---------|
| 0 | off | off | off | on | off | off | 240 | 2 |
| 1 | off | on | off | on | off | off | 250 | 3 |
| 2 | on | off | on | off | off | on | 328 | 4 |
| 3 | off | off | on | on | off | on | 360 | 5 |
| 4 | off | off | off | off | on | on | 380 | 6 |

NOTE: 2. Regardless of FEP, DECTalk card configuration remains constant, meaning modules 0, 1, 2, 3, and 4 are configured the same for each FEP.

2. Use table 1 to set up a DECTalk card with the I/O address: 240. Install the DECTalk card into slot 2 of the new 3FEP.
3. Use table 1 to set up a DECTalk card with the I/O address: 250. Install the DECTalk card into slot 3 of the new 3FEP.
4. Use table 1 to set up a DECTalk card with the I/O address: 328. Install the DECTalk card into slot 4 of the new 3FEP.
5. Replace the 3FEP cover using the reverse procedure in section 2.1, step 1.

2.5 3FEP Computer Installation

1. Install 3FEP in the CRS main unit cabinet.
2. Install the new FEP switch VGA video cable between 3FEP video out and switch position B.
3. Install the new FEP switch PS/2 keyboard cable between 3FEP keyboard connection and switch position B.
4. Install the new LAN cable segment and BNC tee connector to connect the 3FEP PC into the existing CRS LAN (3FEP shall be connected between 2FEP and 5MP). (See figure A-15).

2.6 ASM Card Installation

1. Remove ASA slot 8 and 9 covers by removing the two screws.

NOTE: There are five jumpers to be set on each ASM card.

2. Take one of the new ASM cards and set the jumpers for slot 8 of the ASA according to table 2.
3. Install the new ASM card into slot 8 of the ASA chassis and tighten the two screws.
4. Using table 2, repeat steps 2 and 3 for the new ASM card in slot 9, and the existing ASM cards in slots 4 through 7.

Table 2. ASM Card Jumper Settings

| | ASA Slot # | Silence Alarm Jumper "JP1" | ACP Channel Select Jumper "JP2" & "JP3" | BKUP Live/ Playback Cntrl Jumper "JP4" | FEP Select Jumper "JP5" |
|----------------------------------|------------|----------------------------|---|--|-------------------------|
| ASM 1 (channel 1) | 1 | EN (Enable) | 1 | BUL2 | 1FEP |
| ASM 2 (channel 2) | 2 | EN (Enable) | 2 | BUL2 | 1FEP |
| ASM 3 (channel 3) | 3 | EN (Enable) | 3 | BUL2 | 1FEP |
| ASM 4 (channel 4) | 4 | EN (Enable) | 4 | BUL2 | 2FEP |
| ASM 5 (channel 5) | 5 | EN (Enable) | 5 | BUL2 | 2FEP |
| ASM 6 (channel 6) | 6 | EN (Enable) | 6 | BUL2 | 2FEP |
| ASM 7 (channel 7) | 7 | EN (Enable) | 7 | BUL2 | 3FEP |
| ASM 8 (channel 8) | 8 | EN (Enable) | 8 | BUL2 | 3FEP |
| ASM 9 (channel 9) | 9 | EN (Enable) | 9 | BUL2 | 3FEP |
| ASM PB1 (mon/playback chan 1) | PB1 | DIS (Disable) | PB1 | PB | 1FEP |
| ASM PB2 (mon/playback chan 2) | PB2 | DIS (Disable) | PB2 | PB | 2FEP |

2.7 Operational and Spare ASC Jumper Setting and Cable Installation

1. Disconnect five DECTalk-ASC audio cables (labeled as 4-1, 4-2, 4-3, 4-4, and 4-5).
2. Disconnect the two ACP-ASC audio cables.
3. Disconnect the ASC-4BKUP parallel port interface cables.

4. Disconnect the two ACP-ASC control cables.
5. Loosen the four front panel screws and extract the ASC card.
6. Refer to 1. On both the operational and spare ASC, set the backup channel configuration by positioning the seven jumpers on JP1. Using all seven jumpers, move the jumpers to the side of the block that lists the number of output channels for your site configuration (the center row of pins is common). For example, if your site has 5, 6, 9, or 10 channels, connect each jumper from the center pin to the top pin; if your site has 1, 2, 3, 4, 7, 8, 11, 12, or 13 channels, connect each jumper from the center pin to the bottom pin.

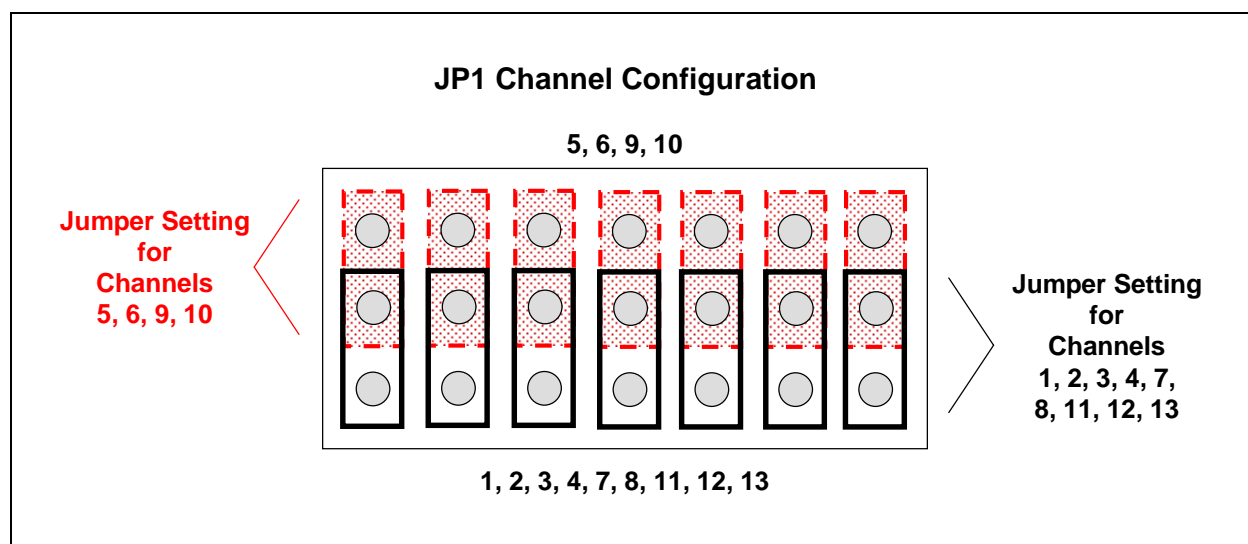


Figure 1. ASC Card Jumper Block (JP1)

7. Insert the ASC back into the ASA and tighten the four front panel screws.
8. Reconnect the two ACP-ASC control cables.
9. Reconnect the ASC-4BKUP parallel port interface cable.
10. Reconnect the two ACP-ASC audio cables.
11. Reconnect existing DECTalk-ASC audio cables on 4BKUP according to table 3 with the exception of the unused cable labeled 4-4. Tie the unused cable back with tie-wraps.

Table 3. DECTalk to ASC Audio Cables

| From | To | Cable Label |
|---------------------------|-------------------------|-------------|
| 4BKUP DECTalk 1 "J2" Port | ASC "BKUP Audio 1" Port | 4-1 |
| 4BKUP DECTalk 2 "J2" Port | ASC "BKUP Audio 2" Port | 4-2 |
| 4BKUP DECTalk 3 "J2" Port | ASC "BKUP Audio 3" Port | 4-3 |
| 4BKUP DECTalk 5 "J2" Port | ASC "BKUP Audio 5" Port | 4-5 |

CAUTION

Ensure the unused DECtalk-ASM/ASC cable 4-4 is not connected to any ASM/ASC port.

2.8 DECtalk-ASM Audio Cable Installation Procedure

1. Using write-on cable labels, mark and connect the new DECtalk-ASM audio cables on 3FEP according to table 4.
2. Reconnect and relabel the existing DECtalk-ASM audio cables on 1FEP and 2FEP according to table 4, with the exception of the unused slot 5 DECtalk-ASM cable labeled 1-4.
3. Tie the unused cable back with tie-wraps.

Table 4. DECtalk to ASM Audio Cables

| From | To | Cable Label |
|--------------------------|-------------------|-------------|
| 1FEP DECtalk 1 "J2" Port | ASM 1 "IN Port" | 1-1 |
| 1FEP DECtalk 2 "J2" Port | ASM 2 "IN Port" | 1-2 |
| 1FEP DECtalk 3 "J2" Port | ASM 3 "IN Port" | 1-3 |
| 2FEP DECtalk 1 "J2" Port | ASM 4 "IN Port" | 2-1 |
| 2FEP DECtalk 2 "J2" Port | ASM 5 "IN Port" | 2-2 |
| 2FEP DECtalk 3 "J2" Port | ASM 6 "IN Port" | 2-3 |
| 3FEP DECtalk 1 "J2" Port | ASM 7 "IN Port" | 3-1 |
| 3FEP DECtalk 2 "J2" Port | ASM 8 "IN Port" | 3-2 |
| 3FEP DECtalk 3 "J2" Port | ASM 9 "IN Port" | 3-3 |
| 1FEP DECtalk 5 "J2" Port | ASM PB1 "IN Port" | 1-5 |
| 2FEP DECtalk 5 "J2" Port | ASM PB2 "IN Port" | 2-5 |

CAUTION

Ensure the unused DECtalk-ASM/ASC cable 1-4 is not connected to any ASM/ASC port.

2.9 New Transmitter Audio Output Cable Installation

1. Install the new audio output cable to connect the OUT1 port of new ASM card at slots 8 and 9 of the ASA chassis to the Demarc panel position for the new transmitters.
2. Install the new NWRSAME encoders (if available) to the top panel of the 5MP workstation (if available).

3. Install the Encoder-ACP interface cable from the NWRSAME encoder rear connector to the SAME Input 1 port of ACP2 rear panel (this connects to pins 2, 6, 7, 9, and 10 of the NWRSAME encoder), if available.

This completes the hardware modification.

PART 3 - CRS POWER-UP PROCEDURES

CAUTION

Before powering up the FEPs, you must perform the *New Configuration Physical Verification* procedure contained in attachment C to verify proper system configuration. Failure to perform the procedure can result in transmitter broadcasts assigned to incorrect output channels.

3.1 Power-Up Peripherals

Power-up the following peripherals:

| Operator's Station | Equipment Room |
|--------------------|---|
| 0MP and Monitor | 4BKUP |
| 5MP and Monitor | 1FEP |
| NWRSAME (all) | 2FEP |
| | 3FEP |
| | LAN bridge |
| | LAN server |
| | Monitor |
| | Printer |
| | Audio switching assembly (ASA) power supplies |
| | Modem |

3.2 Power-Up FEP

1. Press the **ON/OFF** switch (on the front center right of the enclosure) to power-up the FEPs. A green power LED on each FEP lights when the power is on. The FEPs can be powered-up in any sequence. The FEPs go through a memory check, display the system configuration [as recognized by the basic I/O system (BIOS)], and boot the embedded operating system. At the completion of the boot process, the console screen displays the prompt:
Console Login:

The embedded operating system automatically initializes to a pre-set level and waits for final start-up commands from the master MP.

NOTE: The FEPs share a common console through the *Shared Monitor Switch*. The console displays messages while completing the boot process of the FEP currently switched in

2. Use the *Shared Monitor Switch* to select the next FEP. The console monitor displays:
Press <F1> to resume, <F2> to Setup.
3. Press **F1** to complete the boot process. The prompt displays:
Console Login:
4. Repeat for each remaining FEP.

3.3 Power-up Main Processors

NOTE: 1. Power-up 0MP as the master main processor and 5MP as the shadowing processor.

Press the **ON/OFF** switch (on the front center right of the enclosure) to power-up the MPs. A green power LED on each MP lights when the power is on. The MPs can be powered-up in any sequence. The MPs go through a memory check, file system check, system configuration verification (as recognized by the BIOS), and boot the embedded UNIX operating system. At the completion of the boot process, the workstation screen displays the CRS Login screen. The MPs are now ready for the initialization of the CRS application software.

NOTE: 2. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To continue the login process, click the **Acknowledge** button.

3. Whenever the MPs are powered-up, they automatically step through the boot process to the multiuser mode without operator intervention.

3.4 CRS Application Software Installation on the New FEP

1. If the 0MP was rebooted, at the *Login GUI* window, login as the root user.
2. Click the **KDE Desktop Application Starter** (the *big K wheel* icon) in the lower left part of the *KDE Desktop* panel. If the 0MP was not rebooted, proceed to step 3.
3. Click the **SCO Control Center** pop-up menu selection.

NOTE: 1. *SCO Control Center* may also be started by clicking **SCO Admin** (the *Swiss Army Knife* icon) on the *KDE Desktop* panel.

4. Double-click the **Software_Management** menu selection.
5. Double-click the **Applications Installer** menu selection.

6. Place the CD with the CRS software into the CD-drive of the selected installation MP. In the upper half of the *Application Installer* window, the prompt displays:
Install from:
7. Select **CD-ROM_1** from the pop-up menu. Three icons display:
crsopsais (auto installer)
crsopsfpm (FEP multi-pack)
crsopsmpm (MP multi-pack)
8. Select **crsopsais**, and click the **Install** button on the right side of the upper window.

NOTE: 2. Both *crsopsfpm* and *crsopsmpm* **can only be installed indirectly** through *crsopsais*.

9. Respond to the prompts displayed in the *Add Application: crsopsais* and *auto_install* terminal windows.

NOTE: 3. The *Add Application: crsopsais* and the *auto_install* windows are used to display the installation activity log as well as the prompts to the installation operator. The log information and the prompt sequences vary depending on the responses to the prompts.

10. When the installation process completes, the following question displays:
Continue[0MP | 5MP] shutdown? (Default: y)

NOTE: 4. Shutting down the installation MP [0MP | 5MP] is an option. It is not necessary to shut down after the software has been installed on an FEP. A shut down is **RECOMMENDED** after CRS software has been installed on an MP to ensure the installation MP [0MP | 5MP] and the other MP [0MP | 5MP] are functionally synchronized as CRS master and CRS shadow.

11. Press **Enter** to continue.

NOTE: 5. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To display the *Login* screen and continue the login process, click the **Acknowledge** button.

12. The FEP physically connected through the *Shared Monitor Switch* starts itself automatically following shutdown. To complete the startup sequence for the remaining FEPs, use the *Shared Monitor Switch* on the equipment rack to select the next FEP for rebooting. The console monitor displays:
Press <F1> to resume, <F2> to Setup.

13. Press **F1** to complete the boot process. The prompt displays:
Console Login:
14. Repeat for each remaining FEP.

PART 4 - CRS LOGIN, APPLICATION SOFTWARE ERROR VERIFICATION, AND TEST DATABASE ASCII FILE LOADING PROCEDURES

4.1 CRS Login

- NOTE:**
1. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To continue the login process, click the **Acknowledge** button.
 2. The *CRS Login Screen* allows you to log onto CRS. This screen contains two fields: *Login ID* and *Password*. The fields are provided to allow you to type in your assigned login ID and password.

1. Type **admin** (for system administrator) in the *Login ID* field, and press **Enter**. The cursor moves to the *Password* field.
2. Type in your assigned password, and press **Enter** to complete the CRS login process. The system displays the *CRS Main* display. In addition, the system displays the following error message:
System is not operational. Perform 'Start CRS' to start system.
3. Click **OK** to clear the message.

- NOTE:**
3. The error message is only a status message indicating CRS is not running.

4.2 CRS Application Software Installation Error Verification

1. Open a *UNIX Shell*.
 - a. Click **Maintenance**.
 - b. Click **UNIX Shell**.
2. Type **grep ERROR /crs/install.log** and press **Enter**.
3. Ensure there are no error messages. Any error messages must be reported to the CRS Site Support Staff at 301-713-0191 x145 or x144.
4. Type **grep WARNING /crs/install.log** and press **Enter**.
5. Ensure there are no error messages. Any error messages must be reported to the CRS site support staff at 301-713-0191 x145 or x144.

- NOTE:** Ignore any IP address error messages.

4.3 CRS Test Database ASCII File Loading

NOTE: 1. The following instructions for loading the CRS test database ASCII file assume everything is completed with OMP set as the MP.

1. Open a *UNIX Shell*.
 - a. Click **Maintenance**.
 - b. Click **UNIX Shell**.
2. Place the diskette with CRS test database ASCII files in the OMP diskette drive to copy the desired file from the diskette to CRS.
 - a. Type **mdir a:**, and press the **Enter** key to display a directory listing of the files on the test database diskette. There are 13 files on the diskette with the following filename convention:
TYPW_CFG.ASC where $W = 1 - 4$
LRGX_CFG.ASC where $X = 5 - 8$
MAXY_CFG.ASC where $Y = 9$
MAXZ_CF.ASC where $Z = 10 - 13$
(W , X , Y , and Z represent the number of transmitters supported by your CRS)
 - b. Locate the applicable test database ASCII file.
 - c. Type **mcopy a:filename /crs/data/SS/filename** (where *filename* is the name of the CRS test database ASCII file to be used).
 - d. Press the **Enter** key.
3. Click and hold the left mouse button on any white space, move the cursor to select **XCRS_SITE Utility**, and release the button to bring up the *XCRS_SITE Utility* window.
4. Click the **Select ASCII Site Setup** button to bring up the list of ASCII files.
5. Select the desired database ASCII filename copied from the diskette in section 4.3, step 2.c and double-click it.

NOTE: 2. The directory selection block has a default directory name of */crs/data/SS*, and the file filter block has a default file name of */crs/data/SS/*.ASC*. If the desired filename does not appear, it may have copied to the wrong directory in section 4.3, step 2.c. If that is the case, change the default directory name to the directory specified in section 4.3, step 2.c. The other reason the filename may not appear is because it is being filtered out. UNIX is case sensitive and if copied with an asc extension in lower case it does not display. Change the filter file name to */crs/data/SS/*.asc*, and the filename displays.

6. Select **Initialize System Configuration and Database** to ensure the entire system database and configuration is erased and replaced.

7. Click the **Start Site Configuration** button. The system displays:
Will now perform FULL site reconfiguration. Continue?
8. Click **OK**. The “wristwatch” and the “working” message display. Several messages scroll by. The last message reads:
Finished with site configure.

The “wristwatch” and “working” message disappear. Ensure there are no error messages at the completion of the site configuration process. Any error messages must be reported to CRS site support staff at 301-713-0191 x145 or x144.
9. Restart CRS by clicking **Start CRS System**. The system displays:
The CRS system will be STARTED. Continue?
10. Click **OK**. The “wristwatch” and the “working” message display. Several messages scroll by. The last message refers to starting 4BKUP. The “wristwatch” and “working” message disappear.
11. Click **Exit** to close the *XCRS_SITE Utility* window.
12. Click the **UNIX Shell** window to select it. At the prompt type **Exit** and press **Enter** to close the *UNIX Shell*.
13. Open the *System Status* window.
 - a. Click **System**.
 - b. Click **System Status**.
14. Monitor the *System Status* window and ensure the system is operational.

PART 5 - POST HARDWARE EXPANSION CHANNEL OPERABILITY VERIFICATION PROCEDURES

5.1 Channel Operability Verification

| |
|---|
| <p>NOTE: CRS test database ASCII files contain test messages configured for continuous broadcast for channel operability verification.</p> |
|---|

1. Connect a monitor speaker or headphones to the ACP.
2. Using the *Channel Select* control, select each channel, one at a time, and monitor the output for the correct message (i.e., With Channel one selected, the message output is:
This is transmitter one, audio switch module one.)

5.2 FEP Backup Mode Channel Operability Verification

1. Click **Maintenance**.
2. Click **Front-End Processor Switch**.

3. Select **1** in the *Front-End Processor Switch* window under *FEP*.
4. Select **Out** under *Switch*.
5. Select **Yes** under *Backup*
6. Click the **Save the current record** icon to execute the FEP switch process. The *Question* window displays:
Switch out the FEP FULLY offline ???
7. Click **OK** to continue. The system displays the “wristwatch” and the “Requesting FEP Switchout” message.
8. Monitor the *1FEP* and *4BKUP* system status icons and verify that the *1FEP* icon is in backup mode and the *4BKUP* icon displays the online status.
9. Upon completion of the FEP switch process, repeat section 5.1 steps 1 and 2.
10. Upon completion of the FEP backup mode channel operability verification, perform the following to display the *Front-End Processor Switch* window:
 - a. Click **Maintenance**.
 - b. Click **Front-End Processor Switch**.
11. Select **1** in the *Front-End Processor Switch* window under *FEP*.
12. Select **IN** under *Switch* to switch 1FEP back in.
13. Click the **Save the current record** icon to execute the FEP switch process. The system displays the “wristwatch” and the message:
Requesting FEP switch-in...
14. Monitor the *1FEP* and *4BKUP* system status icons and verify that the *1FEP* icon is online and the *4BKUP* icon displays the backup mode status.
15. When the system returns to normal operation, perform the following steps to close the *Front-End Processor Switch* window and stop CRS:
 - a. On the *Front-End Processor Switch* window:
 - (1) Click **File**.
 - (2) Click **Exit**.
 - b. On the *Main CRS* menu:
 - (1) Click **System**.
 - (2) Click **Stop System**.
 - (3) Click **OK**.
 - (4) Click **Close**.
16. Monitor the *System Status* window and verify the CRS application has stopped.

PART 6 - ADDING NEW TRANSMITTER CHANNELS AND EDITING SITE DATABASE ASCII FILE PROCEDURES

6.1 Adding New Transmitter Channels

1. Click and hold the left mouse button on any white space, move the cursor to select **XCRS_SITE Utility**, and release the button to bring up the *XCRS_SITE Utility* window.
2. Click **Select ASCII Site Setup** button to bring up the list of ASCII files.
3. Select the current site database ASCII file and double click.
4. Click **Add Transmitter(s)** button to start the **addxmt** program. It displays how many channels currently are available, the next available channel to be added, and the appropriate processor and slot.
5. Use the following sequence of steps for each channel to be added:
 - a. Mnemonic
 - (1) Type option number **1** and press **Enter** to select *Mnemonic*.
 - (2) Type **a** and press **Enter** at the program prompt to add *Mnemonic*.
 - (3) Type **mmmmm** and press **Enter** (where *mmmmm* is the desired *Mnemonic*), up to a length of 5 characters. The program returns the *Mnemonic*.
 - (4) Type **0** or press **Tab** and press **Enter** to complete *Mnemonic* selection.
 - b. Call Sign
 - (1) Type option number **2** and press **Enter** to select *Call Sign*.
 - (2) Type **a** and press **Enter** at the program prompt to add the *Call Sign*.
 - (3) Enter the *Call Sign* in the same manner as the *Mnemonic*, up to a length of 5 characters. The program returns the *Call Sign*.
 - (4) Type **0** or press **Tab** and press **Enter** to complete the *Call Sign* selection.
 - c. Frequency
 - (1) Type option number **3** and press **Enter** to select *Frequency*. The *Frequency* option only allows a selection of one of the seven choices listed.
 - (2) Type **n** and press **Enter** (where *n* is the desired *Frequency* choice). The program returns the *Frequency* choice by displaying an asterisk next to the *Frequency* selection.
 - (3) Type **0** or press **Tab** and press **Enter** to complete the *Frequency* selection.
 - d. Location
 - (1) Type option number **4** and press **Enter** to select *Location*.

- (2) Type **a** and press **Enter** at the program prompt to add the *Location*.
 - (3) Enter the *Location* (in the same manner as the *Mnemonic* and the *Call Sign*) up to a length of 40 ASCII characters. The program returns the *Location*.
 - (4) Type **0** or press **Tab** and press **Enter** to complete the *Location* selection.
- e. Add Transmitter
- (1) Type option number **5** and press **Enter** to use all the parameters defined in the first four steps to configure a new channel in the database ASCII file. The program verifies that a new channel is really needed.
 - (2) Type **y** and press **Enter**. The program returns the assignment of each channel to its proper processor and slot. The program tells you the appropriate database ASCII file has been updated and the original has been saved with the .SAV extension.
6. The program then asks if another channel is needed. If so, repeat steps 5 **a** through **e** for the next new channel. If not, type **n** and press **Enter** to exit the program.

6.2 Editing the Site Database ASCII File Procedure

1. When exit **addxmt** is done, the *Question* box displays:
Ready to recompile selected ASCII file. Continue?
2. Click **Cancel** to close the *Question* box.
3. Select **Initialize System Configuration and Database** to ensure the entire system database and configuration is erased and replaced.
4. Click **Start Site Configure**. The *Question* box displays:
Will now perform FULL site reconfiguration. Continue?
5. Click **OK** to recompile the database ASCII file. Upon completion of the database ASCII file recompile process, the system displays:
Finished with site configure.
6. Restart CRS by clicking on **Start CRS System**. The system displays:
The CRS system will be STARTED. Continue?
7. Click **OK**. The “wristwatch” and the “working” message display. Several messages scroll by. The last message refers to starting 4BKUP and the “wristwatch” and “working” message disappear.
8. Click **Exit** to close the *XCRS_SITE Utility* window.
9. Open the *Alert Monitor* window.
 - a. Click **System**.
 - b. Click **Alert Monitor**.

NOTE: No attempt is made by **addxmt** to establish station identifiers, broadcast programs, broadcast suites, message types, voice parameters, keep-alive messages, interrupt messages, etc. for the new transmitters. These must be configured through the CRS graphical user interface (see the *CRS Site Operator's Manual*) and updated in the site database ASCII file.

PART 7 - CRS SYSTEM ALIGNMENT PROCEDURES

NOTE:

1. In the following sections, **all** procedures must be performed, but **ONLY** for the added transmitters, i.e., added ASM cards, ***NOT starting from channel one.***
2. The CRS System Alignment is complex and requires two people.
3. Before proceeding, read the entire Part 7, CRS System Alignment Procedures, to gain a thorough understanding of the system alignment.

7.1 Introduction

The console replacement system (CRS) has two major operational functions:

- normal operation
- Backup Live (BUL)

Normal Operation - For normal operation, the CRS requires all MPs, FEPs, the ACP, and the ASA to work together. The DECTalk cards residing in the FEPs are used to generate all required audio outputs, including the NWRSAME tones, the CRS alert tone (1050 Hz), transmitter transfer tones, and, when the Voice Improvement Processor (VIP) is inoperative, the CRS synthesized voice. Live voice is input through a microphone and voice processor, and then digitized by an analog-to-digital converter (ADC) card residing in the MP. The digitized voice is then converted to an analog output by the DECTalk cards. The analog output from each DECTalk card is sent to a dedicated ASM card as the final CRS output for each audio channel. During normal operation, the VIP produces the CRS synthesized voice. The audio output from the VIP is controlled by the VIP application software through the graphical user interface (GUI). The audio output levels from the DECTalk cards are controlled by the CRS application software through the GUI to adjust the alert tone amplitude, transmitter transfer tone amplitude, NWRSAME tone amplitude, and voice volume.

Backup Live Operation - During BUL, the CRS uses only the ACP and the ASA. All the MPs and FEPs are bypassed during BUL. The ACP is used to generate the alert tone and the transmitter transfer tones. The external NWRSAME (B343-1) ECR-200 is used to generate the NWRSAME tones during BUL. Live voice (live microphone) is input through a microphone to a voice processor, and is then sent through the ACP and the ASA without any digitization. During BUL, the alert tone level is controlled by a tone volume control located at the front upper left corner of the ACP, and the level of the NWRSAME tones is controlled by a gain control potentiometer on the circuit board at the rear of the NWRSAME. The "Live Voice" output level, in

either normal operation or BUL, is controlled by a microphone volume control located in the front lower central area of the ACP.

NOTE: The output level of live voice and recorded voice is controlled by the microphone volume Mic. control on the front of the ACP. When the index mark of the microphone volume control knob is set to the Auto position (full CCW), voice volume is automatically adjusted by the Symetrix 425 Voice Processor. A positive detent is felt when this mode is selected. When the microphone volume control is not set to the Auto position, voice volume is manually controlled. Voice output level is displayed using the VU meter on the front of the ACP.

7.2 Setup Procedures for the AM-48 Test Set

1. Power-up the AM-48 Test Set using the rocker switch (upper right side).
2. Set the **AM-48 Test Set** controls as indicated in Table 5. (Refer to the *AM-48 Instruction Manual* and/ or *Appendix J* of the CRS Maintenance Manual for further explanations on setup.)

Table 5. AM-48 Test Set Controls Setup

| Function | Left Side of Test Set |
|-------------------------------|---|
| Volume | Mid position |
| MON RCV, MON SND, Talk Switch | Mid position |
| Term, BRDG | Term |
| TONE, PULSE, ON HK | TONE |
| 900-ohm, 600-ohm | 600-ohm |
| 2w, 4w, 4w REC | 2w |
| Right Side of Test Set | |
| ABS, REL, SEND | ABS |
| DAMP, OFF | OFF |
| SEL Filter | C-MSG (Displayed at bottom of LCD reader) (Printed on bottom of display) |
| SEL MEASURE | L/F (Printed on bottom of display) |
| SEL SEND | Quiet (Printed on bottom of display) |
| MF, DTMF, SHIFT | DTMF |
| SF SKP, NOR, X TONE | NOR |
| RCL/STC, PRINT | Mid position |

3. When performing any of the following alignments, the system output at the ASM card to the transmitter/channel under test must be disconnected and terminated into the AM-48 test set. The AM-48 must be set to the 600-ohm internal terminator. If the ASM card for a channel is using both audio outputs to different

transmitters, then the other output needs to be terminated into a 600-ohm load. If the second output is connected to something else (i.e., music on hold for the phone system) then leave it connected while performing alignment.

4. The OUT1 and OUT2 jacks on the ASM card front panel are not isolated from each other. Using a second output affects the output of the first (i.e., connected to music on hold for the phone system). If the load on the ASM card is increased, the audio output level decreases.
5. Connect the RJ-11 cable to the 4W RCU jack on the bottom of the AM-48.
6. Remove the transmitter feed output RJ-11 plug from the selected ASM card output jack.
7. Connect the AM-48 Test Set to the ASM card output jack corresponding to all transmitters being fed by channel under test.

7.3 Alignment Approach

7.3.1 General

Each ACP has a factory calibrated volume unit (VU) meter on the front. The VU meter is used to monitor the following signals:

1. Alert tone and transmitter transfer tone generated by the ACP during BUL.
2. NWRSAME tone generated by the NWRSAME panel during BUL.
3. Playback signal from the selected ASM card during “normal operation.”

During normal operation, signals from the DECTalk cards are sent through the dedicated ASM cards for final output. During BUL, tones generated by both the ACP and NWRSAME are sent through the ACP, ASC, and to selected ASM card(s) for final output. Each audio output channel has one dedicated ASM card with a 12-turn transmitter channel gain control potentiometer to control the final output gain in both normal operation and BUL. Each ASM card is aligned by adjusting the transmitter channel gain control potentiometer. After alignment is completed, the transmitter channel gain remains fixed and should require no further adjustment unless the card is replaced.

For BUL, the operator can adjust the *Tone* volume control on the front of the ACP to adjust the output level for the alert tones, transmitter transfer tones, and NWRSAME tones. During BUL, alert tones and transmitter transfer tones are generated by the ACP. NWRSAME tones are generated by the NWRSAME.

7.3.2 Playback and Normal Audio Output Levels

The ASM card's playback signal level is different from its final output signal level. This is because the playback signal level is sampled before the transmitter channel gain control potentiometer, and the final output signal level is sampled after the transmitter channel gain control.

NOTE: When monitoring a channel (NOT USING BUL), the ACP VU meter does not monitor the final output of the ASM card. The amplitude of the monitored signal (from the VU meter) is 1.2 higher than the amplitude of the final output of the ASM card (i.e., the 1050 Hz Alert Tone). When the ASM card's final output amplitude is set to 0 dBm (using the AM-48 Test Set), the VU meter reading should indicate a level of + 1.2 (± 0.5). Therefore, the VU meter can be used to measure the output level in conjunction with the AM-48 Test Set.

7.3.3 Tone Volume Control

When the *Tone* volume control knob's index mark is set to the *Ref* position, the output level of ACP generated tones are set at 0 dBm. Since the tone volume control knob does not have a detent associated with the *Ref* position, the operator may not know whether the tone volume control is accurately set.

The fixed *Ref* mark arrow on the ACP front tone control is only the starting point for the alignment procedure. After completing the alignment, the new index mark on the tone knob may or may not align with the *Ref* arrow on the ACP front panel. The position of the tone knob index mark following this alignment is where it should remain during normal operation.

7.3.4 Transmitter Channel Gain Control

The transmitter channel gain control on an ASM card is a 12-turn potentiometer, adjusted by using a small jeweler's screwdriver through the ASM card front panel. Turning the gain control clockwise increases the output level to a maximum of 3.5 dB into a 600-ohm load (when fully clockwise).

All other adjustments are done on a "setup only basis" using the GUI. Associated setups are made using recommended values and require no further alignment effort. The associated gains are set to suggested values using the GUI for DECTalk generated outputs (such as the alert tone, transmitter transfer tones, NWRSAME tones, and synthesized voice). For the ACP generated outputs (such as the alert tone and transmitter transfer tones), the tone volume control knob on the front upper left corner of the ACP is set to the *Ref* position.

NOTE: *During the following alignments in sections 7.4, 7.5, and 7.6, CRS remains operational. However, the audio to each transmitter being tested will be interrupted while that channel is being aligned.*

7.4 Backup Live Alignment Procedures

Three alignments need to be made on the CRS. These alignments should be performed in the following sequence:

1. ACP Ref Mark Alignment
2. ASM Card Alignment
3. NWRSAME Alignment

During BUL, alert and transfer tones are generated by the ACP, and NWRSAME tones are generated by the NWRSAME panel. Refer to Table 6, for the alignments in the following sections.

Table 6. Tone Frequencies, Tolerances, and Duration

| Tone Type | Frequency | Tolerance | Duration | Tolerance |
|-------------------------------|------------------|-------------|----------|----------------|
| Primary to Secondary Transfer | 1800 Hz followed | ± 5 Hz | 5 sec. | ± 0.5 sec. |
| | by 2400 Hz | ± 5 Hz | 5 sec. | ± 0.5 sec. |
| Secondary to Primary Transfer | 2400 Hz followed | ± 5 Hz | 5 sec. | ± 0.5 sec. |
| | by 1800 Hz | ± 5 Hz | 5 sec. | ± 0.5 sec. |
| Alert Tone 1 | 1050 Hz | $\pm 0.3\%$ | 10 sec. | ± 2 sec. |
| Alert Tone 2* | 1200 Hz | $\pm 0.3\%$ | 10 sec. | ± 2 sec. |
| Alert Tone 3* | 1350 Hz | $\pm 0.3\%$ | 10 sec. | ± 2 sec. |
| Alert Tone 4* | 1500 Hz | $\pm 0.3\%$ | 10 sec. | ± 2 sec. |
| Alert Tone 5* | 1650 Hz | $\pm 0.3\%$ | 10 sec. | ± 2 sec. |

* Not currently used—reserved for future use.

NOTE: 1. This alignment requires two people: one in the operations room, and one in the equipment room.

Make copies of Table 8 (last page in Part 7) in order to fill in the initial and final value measurements for the alignments below. The data will be used for alignment verification and reference for future alignments. Print out sufficient copies of the table to equal the number of ASM cards installed.

When performing the following BUL Procedures, it is optional to disable the transmitter, under the Transmitter Configure Menu, that is being aligned. This prevents unwanted silence alarms in operational areas.

If there is still a problem with reception of the NWR broadcast voice, alert tone, or NWRSAME messages or the correct audio level/modulation cannot be obtained at the transmitter after performing all the below procedures (7.4.x through 7.6.x) plus the NWR Transmitter Preventive Maintenance Schedule procedures (Maintenance Note 56), the NWR System Alignment (End-to-End) procedures (Maintenance Note 57) must be performed to determine the source of the problem.

The following equipment is required:

1. Ameritec AM-48 Transmission Test Set to read the audio signal level
2. Small jeweler's screwdriver
3. RJ-11 phone cable (approximately 6 feet)

NOTE: 2. The ACP Ref mark alignment must be done by site personnel. Both the ASM card alignment and NWRSAME alignment **cannot** be performed until the ACP Ref mark alignment is done.

7.4.1 ACP Ref Mark Alignment

1. Verify that the **AM-48 Test Set** is properly setup and connected to the ASM card according to section 7.2.
2. Position the ACP **Channel Select** knob to **Transmitter 1**.
3. On Table 8 under “Before Adjustment” in the “On | Above | Below Mark” block, circle the current ACP *Tone* volume control knob position relative to the *Ref* arrow (On, Above, or Below). Align the index mark on the front of the ACP *Tone* knob with the **Ref** position arrow.
4. To start BUL on Channel No.1, push the **Transmitter Select 1** button and the **Transmitter Select Enable** button in sequence. These controls are in the *BACKUP LIVE* area on the front of the ACP.
5. Push the **Transfer/Alert Tones 1** button to cause the ACP to generate the 1050 Hz alert tone. The duration of the 1050 Hz alert tone is 10 seconds.
6. Observe the VU meter on the ACP front panel. It should indicate **0** on the red scale.
7. If the VU meter does not indicate a reading of **0**, adjust the **Tone** volume control until that level is obtained.
8. Repeat steps 5, 6, and 7 until a reading of **0** is obtained. When the *Tone* volume control is set to the true reference position, the ACP provides the selected alert tone level of 0.

NOTE: If the final position does not coincide with the fixed ACP *Ref* arrow, a nonpermanent mark (tape, sticker, etc.) can be made on the panel of the final alignment position so operators do not incorrectly change the tone knob back to align with the Ref arrow. Do NOT deface the front of the ACP with any kind of permanent marking!

9. Make sure to keep the Ref position as aligned in this procedure. Do not change this position unless another alignment is needed. Place a note to inform the operators not to touch the knob. On Table 8 under “Final Reading” in the “On | Above | Below Mark” block, circle the final ACP *Tone* knob position relative to the fixed *Ref* arrow (On, Above, or Below).
10. To stop BUL, push the **Transmitter Select Enable** button and the **Transmitter Select 1** button in sequence.

7.4.2 ASM Card Alignment

Alignment Procedures

1. Verify that the **AM-48 Test Set** is properly setup and connected to the ASM card according to section 7.2.
2. Ensure the index mark on the *Tone* volume control knob is set to the reference position as determined in section 7.4.1, *ACP Ref Mark Alignment* procedure.
3. Position the ACP **Channel Select** knob to **1** (Transmitter 1).
4. Start BUL on ASM output channel No.1 by pushing the **Transmitter Select 1** button and the **Transmitter Select Enable** button in sequence. These buttons are located in the *BACKUP LIVE* block area on the front of the ACP.

| |
|---|
| <p>NOTE: 1. The alert tone output from the ACP lasts only 10 seconds. It is recommended a second person push the Alert Tone 1 button for a near continuous tone output. This smooths out the calibration effort and minimizes the time required.</p> <p>2. During BUL, the VU meter monitors the ACP tone output, not the output of the ASM card. The ACP tone output is sent to the ASM card by way of the ASC for final output.</p> |
|---|

5. Push the **Transfer/Alert Tones 1** button to send an alert tone to the ASM card No. 1 output. Record the initial AM-48 reading in Table 8.
6. Using a small jeweler's screwdriver, adjust the transmitter gain control potentiometer through the small hole in the ASM front panel (located above the **In** jack) until a reading of **0** dBm (as close to 0 dBm without going positive) is measured on the AM-48 Test Set.
7. Repeat steps 4, 5, and 6 until a reading of **0** dBm is obtained. Record the final reading in Table 8.
8. Push the **Pri/Sec** transmitter transfer tone button to send out 5 seconds of 1800 Hz tone followed by 5 seconds of 2400 Hz tone.
9. Verify a reading of 0 dBm (± 1.5 dBm) on the AM-48 Test Set for the *Transfer Tones*. Record the final reading in Table 8.
10. Push the **Sec/Pri** transmitter transfer tone button to send out 5 seconds of 2400 Hz tone followed by 5 seconds of 1800 Hz tone.
11. Verify a reading of 0 dBm (± 1.5 dBm) on the AM-48 Test Set for the *Transfer Tones*. Record the final reading in Table 8.
12. To stop BUL, push the **Transmitter Select Enable** button and then the **Transmitter Select 1** button in sequence.
13. Repeat steps 1 through 12 to align each of the other ASM cards in the system. Each ASM card output is activated by selecting the appropriate transmitter on the **Channel Select** knob and by pushing the respective **Transmitter (number)** button

and then the **Transmitter Select Enable** button. ASM card 1 corresponds to Transmitter 1, and ASM card 2 corresponds to Transmitter 2, etc.

7.4.3 NWRSAME (ECR-200) Panel Calibration

NOTE: 1. When performing the following calibration, the system output of the ASM card must be disconnected, and the AM-48 Test Set connected in its place. Refer to the AM-48 set up in section 7.2.

The NWRSAME (ECR-200) calibration must be performed by site personnel.

A small screwdriver is required to adjust the NWRSAME gain control potentiometer.

Calibration Procedures:

NOTE: 2. The front panel key sequence on the NWRSAME for a continuous NWRSAME preamble tone output is TEST and then SEND. Pressing the CANCEL key stops the sequence.

1. Verify that the **AM-48 Test Set** is properly setup and connected to the ASM card according to section 7.2.
2. Ensure the *Tone* volume control knob is set to the index mark as determined in section 7.4.1, *ACP Ref Mark Alignment* procedure.
3. Position the ACP **Channel Select** knob to **1** (Transmitter 1).
4. Start BUL on ASM output channel No.1 by pushing the **Transmitter 1** button and the **Enable** button in sequence. These are located in the *BACKUP LIVE* block area on the front of the ACP.
5. Initiate a continuous NWRSAME preamble tone output from the NWRSAME panel by pressing the **TEST** key once and then the **SEND** key.
6. Located at the back of the NWRSAME panel next to the terminal block is the output gain control potentiometer. Observe and record the initial AM-48 Test Set reading (in Table 8), then adjust the gain control potentiometer for a reading of $-4.5 \text{ dBm} \pm 0.5 \text{ dBm}$ on the AM-48. Record the final AM-48 reading.
7. The levels for voice, warning tone, and SAME messages have been selected to optimize detectability by a receiver. This maximizes the transmitter modulation deviation without causing distortion. The levels selected herein presume frequency response of the telecommunications line to the transmitter is relatively flat and the pre-emphasis circuit in the transmitter is within 1.0 to 2.0 dB of the required 6.0 dB per octave. If these presumptions are not correct, measurements at the audio input at the transmitter site on a case by case basis may be necessary to obtain the optimum modulation (corresponding to a deviation of 4.5 kHz for the NWRSAME tones). ***These transmitter audio level measurements are made during the regular transmitter preventive maintenance interval (see***

Maintenance Note 56). *If the correct audio level/modulation cannot be obtained at the transmitter after the CRS system alignment and periodic preventive maintenance interval are performed, the NWR System Alignment (End-to-End) procedures (Maintenance Note 57) must be performed to determine the source of the problem.*

NOTE: 3. The output gain potentiometer is the only control on the back panel of the NWRSAME. Adjustment of the control is very sensitive because it is a single turn potentiometer.

8. Push the **CANCEL** key on the NWRSAME to stop the generation of the preamble.
9. Push the **Enable** button and **Transmitter 1** button in sequence to stop BUL.

7.5 Voice Processor Setup

The ACP contains a voice processor to provide automatic gain control (AGC) of the input voice. The voice processor is located at the back of the ACP. The setup of the voice processor is important because it affects the quality and output level of the live voice. However, it does not affect any of the previous alignment processes.

7.5.1 Voice Processor Setup Procedure

The microphone volume control (**Mic.**), located on the front of the ACP, controls the output level of live voice and digitized voice. When the index mark of the microphone volume knob is set to the **Auto** position, a positive detent is felt and voice volume is automatically controlled by the *Symetrix 425 Dual Compressor/Limiter/Expander Default Values (Voice Processor)*. When the microphone volume control is not set to the **Auto** position, voice volume is manually controlled. Be advised that when under manual control the live voice level may be too low to be heard or too high causing distortion. The VU meter, on the front of the ACP, displays the voice output level.

Set the **Mic.** to the **Auto** position and setup the *Symetrix 425 Voice Processor* as indicated in Table 7:

NOTE: 1. The following setup is for the Shure SM2 Headset Microphone. The typical voice output level is between - 3.0 dBm and - 4.0 dBm. Use of a different microphone type may require a different setup for the voice processor.

2. If the microphone volume control is not set to the AUTO position, the voice processor **will not** provide AGC on the input voice.

Table 7. Symetrix 425 Dual Compressor/Limiter/Expander Default Values (Voice Processor)

| Voice Processor Control | Default Setting |
|--------------------------|-----------------|
| Channel 1 | |
| <i>Expander:</i> | |
| Threshold | -7 |
| Release | FAST |
| <i>Compressor:</i> | |
| Threshold | -20 |
| Release | FAST |
| Ratio | 10 |
| <i>Limit:</i> | |
| Threshold | 3 |
| <i>Out:</i> | |
| Gain | 6 |
| <i>In/Bypass:</i> | IN |
| <i>Stereo/Dual Mono:</i> | Dual Mono |
| Channel 2 | |
| <i>Expander:</i> | |
| Threshold | -7 |
| Release | FAST |
| <i>Compressor:</i> | |
| Threshold | -20 |
| Release | FAST |
| Ratio | 10 |
| <i>Limit:</i> | |
| Threshold | 3 |
| <i>Out:</i> | |
| Gain | 6 |
| <i>In/Bypass:</i> | IN |

7.5.2 Microphone Background Noise Reduction (if required)

In the event the noise level around the operational area is too great and is picked up by the microphone, the following adjustments can be made to the Symetrix 425 Voice Processor to reduce background noise. Detailed information can be found in section 8.2, page 8-1 of the *Symetrix 425 Owner's Manual*.

1. Set the index mark on the microphone volume control knob on the front of the ACP to **Auto**.
2. When no one is speaking into the microphone, set the *EXPANDER THRESHOLD* for **-16 dB or more** (default threshold is -7 dB) to reduce the background noise.
3. Press the **MIC** button on the Audio Control Panel (located under the OPER volume control knob) to enable the headset microphone.

4. When speaking into the microphone, set the *EXPANDER THRESHOLD* for **0** peak on the ACP VU meter.
5. Set the *EXPANDER RELEASE* to **FAST**.

7.6 CRS Alignment Procedures for Normal Operation Using the *WRSAME Tone Generator* (to match BUL Alignment)

During normal operation, all audio output levels from the DECtalk cards are controlled by the CRS Application. The off-line tone generator application, *WRSAME Tone Generator* provides the ETs the capability to force tones repeatedly without having to schedule messages since the current tones (NWRSAME, Alert, Transfer) are such a short duration. This utility also allows ETs, logged in as **ADMIN**, to modify the durations of the tones to facilitate amplitude adjustment, to backup the current tone settings, or to restore tones from the previous tone settings.

- NOTE:**
1. Do not put the CRS on the air while performing the following procedures.
 2. When performing any of the following alignments, the system output at the ASM card to the transmitter/channel under test must be disconnected and terminated into the AM-48 test set. The AM-48 must be set to the 600-ohm internal terminator. If the ASM card for a channel is using both audio outputs to different transmitters, then the other output needs to be terminated into a 600-ohm load. If the second output is connected to something else (i.e., music on hold for the phone system), then leave it connected while performing alignment.
 3. Any output amplitude changes, which were made through the GUI, will be permanently saved on the system disk once *Save Amplitude* is selected for the corresponding tone. When GUI changes are completed, a new Database Backup will need to be accomplished and a new ASCII file will need to be compiled and saved to a floppy. They will remain unchanged in the system unless the ADMIN operator makes another amplitude change, restores settings from the *WRSAME Tone Generator*, restores a backup database, or recompiles a new database.
 4. This alignment requires two people: one in the operations room, and one in the equipment room.
 5. In the event the 4BKUP processor has replaced one of the FEPs, the CRS software matches the DECtalk amplitude settings for the affected DECtalk cards of the replaced FEP.

The DECtalk card output level adjustment procedures in sections 7.6.2, 7.6.3, 7.6.4, and 7.6.5 MUST be performed on each and every DECtalk card output channel in the CRS. Remember, ACP channel select 1 corresponds to ASM card 1 and transmitter 1, channel select 2, corresponds to ASM card 2 and transmitter 2, etc.

Three adjustments to the DECtalk cards need to be made under the *WRSAME Tone Generator Menu*. The fourth must be made under the *Transmitter Configure* menu. These adjustments should be performed in the following sequence for each transmitter:

1. DECTalk NWRSAME Tone Output Level Adjustment
2. DECTalk Card Alert Tone Output Level Adjustment
3. DECTalk Transmitter Transfer Tone Output Level Adjustment
4. DECTalk Synthesized Voice Output Level Adjustment

The following equipment is required for these adjustments:

- Ameritec AM-48 Transmission Test Set
- RJ-11 phone cable (approximately 6 feet)

7.6.1 Restoring and Saving Settings for CRS Application Alignment

This section provides part of the new features for Build 9.0, where alignment values can be saved or restored separate from the database.

1. **Save Amplitude** - Note the display of tone settings and the corresponding data values are not updated into the transmitter configuration until the *Save Amplitude* button is selected. This must be done **before saving** and **after restoring any settings** for each transmitter.
2. **Restore Settings** - This button will restore tone settings from a previously saved file for all transmitters. The default search pattern in the *file selection* box is set to */home/admin/*.dat*.
3. **Save Settings** - This button will backup the current tone settings for all transmitters to a file. The default search pattern in the *file selection* box is set to */home/admin/*.dat*. Therefore, save the filename with a ".dat" extension. This should be completed after performing the DECTalk NWRSAME Tone Output Level Adjustment, DECTalk Card Alert Tone Output Level Adjustment, and DECTalk Transmitter Transfer Tone Output Level Adjustment.

7.6.2 DECTALK Card SAME Tone Output Level Adjustment

1. Position the **ACP Channel Select** knob to correspond with the transmitter under adjustment.
2. Verify that the AM-48 Test Set is properly setup and connected to the ASM card according to section 7.2.
3. Log into the CRS application as **ADMIN** (if logged in as a different user).
4. Select the **Transmitter** menu and then select **Transmitter Configure**. Select the **Transmitter** to be used for the alignment and then click **Disable** in the *Status Section*. Click the **Save** hot key to change the transmitter status.
5. Click the **Exit** hot key (the large "X" in the upper right of the display) to close the *Transmitter Configure* window.
6. Click the **Maintenance menu** and then select **WRSAME Tone Generator**.

NOTE: 1. The *SAME Tone* operation window is a default window when the *Off-line Tone Generator* program starts up. It can also be selected by clicking the **Same Tones** button from the *CRS Tone Maintenance Utility* window. The possible data values associated with this window are as follows:

- The SAME tone amplitude can be set from 1 to 99.
- The SAME tone duration can be set from 1 to 30 seconds, ± 1 second.
- The Save Amplitude button is used to dynamically update the amplitude level for the selected transmitter. The amplitude is saved in the transmitter configuration and downloaded to the appropriate DECTalk card.

- In the *Choices* section under *Transmitters*, click on the **first transmitter** in the displayed list. The first transmitter name corresponds to ASM card 1; the next transmitter corresponds to ASM card 2; etc.
- Adjust the **SAME Tone Duration** slider to the desired time in seconds.
- Record the initial *SAME Tone Amplitude* slider setting in Table 8.
- Move the **SAME Tone Amplitude** slider to increase or decrease the SAME tone output amplitude, as necessary, to equal -4.5 dBm (± 0.5) on the AM-48 Test Set. A good starting point on the **SAME Tone Amplitude** is 6.
- Click the **Save Amplitude** button to save the new DECTalk card *Amplitude* settings.

NOTE: 2. After the *Save Amplitude* key is clicked, the new settings replace the old values. The new DECTalk amplitude settings are downloaded to the associated DECTalk card. Downloading is instantaneous.

- Click the **Start To Send** button to start the broadcast of the SAME tone.
- Record the initial AM-48 Test Set reading in Table 8.
- Check that the measured output level of the DECTalk generated SAME tone equals -4.5 dBm (± 0.5 dBm) on the AM-48 Test Set. If the reading equals -4.5 dBm (± 0.5 dBm) on the AM-48 Test Set, record the final AM-48 reading and final amplitude slider setting in Table 8. Otherwise, repeat steps 10 through 14.
- Select **EXIT PROGRAM** from the *CRS Tone Maintenance Utility* window (WRSAME Tone Generator).
- When no other adjustments are necessary, select the **Transmitter** menu and then select **Transmitter Configure**.
- Select the **Transmitter** and click **Enable** in the *Status Section*.
- Click the **Save** hot key to change the transmitter status.

NOTE: 3. The following steps must be performed for CRS application versions prior to version 10.

19. Click the **Save** hot key again. The following dialog box displays:

Do you want to re-initialize DECTalk parameters???

20. Click **OK**. The lower left of the *Transmitter Configure* window displays:

Requesting Configuration Change.

The “wristwatch” displays while the configuration changes (about 30 seconds). When completed, the lower left of the Transmitter Configure window displays:

Configuration Changed.

NOTE: 4. The levels for voice, warning tone, and SAME messages have been selected to optimize the detectability by a receiver. This maximizes the transmitter modulation deviation without causing distortion. The levels selected herein assume frequency response of the telecommunications line to the transmitter is relatively flat and the pre-emphasis circuit in the transmitter is within 1.0 to 2.0 dB of the required 6.0 dB per octave. If these assumptions are incorrect, measurements at the audio input at the transmitter site on a case by case basis may be necessary to obtain the optimum modulation (corresponding to a deviation of 4.5 kHz for the NWRSAME tones). ***These transmitter audio level measurements are made during the regular transmitter preventive maintenance interval (see Maintenance Note 56). If the correct audio level/modulation cannot be obtained at the transmitter after the CRS system alignment and periodic preventive maintenance interval are performed, the NWR System Alignment (End-to-End) procedures (Maintenance Note 57) must be performed to determine the source of the problem.***

7.6.3 DECTALK Alert Tone Output Level Adjustment

1. Position the **ACP Channel Select** knob to correspond with the transmitter under adjustment.
2. Verify that the AM-48 Test Set is properly setup and connected to the ASM card according to section 7.2.
3. Log into the CRS application as **ADMIN** (if logged in as a different user).
4. Select the **Transmitter** menu and then select **Transmitter Configure**. Select the **Transmitter** to be used for the alignment and click **Disable** in the *Status Section*. Click the **Save** hot key to change the transmitter status.
5. Click the **Exit** hot key (the large “X” in the upper right of the display) to close the *Transmitter Configure* window.
6. Click the **Maintenance** menu and select **WRSAME Tone Generator**.

- NOTE:** 1. The *Alert Tone* window can be selected by clicking the **Alert Tones** button from the *CRS Tone Maintenance Utility* window. There are five different types of alert tones that can be selected, and all the possible data values associated with this window are as follows:
- The Alert tone amplitude can be set from 1 to 99.
 - The Alert tone duration can be set from 1 to 30 seconds, ± 1 second.
 - The Save Amplitude button is used to dynamically update the amplitude level or the selected transmitter. The amplitude is saved in the transmitter configuration and downloaded to the appropriate DECTalk card.
 - Alert Tone 1 is tone frequency at 1050 Khz.
 - Alert Tone 2 is tone frequency at 1200 Khz. (Not Used.)
 - Alert Tone 3 is tone frequency at 1350 Khz. (Not Used.)
 - Alert Tone 4 is tone frequency at 1500 Khz. (Not Used.)
 - Alert Tone 5 is tone frequency at 1650 Khz. (Not Used.)

- In the *Choices* section under *Transmitters*, click the desired **Transmitter** in the displayed list. The first transmitter name corresponds to ASM card 1; the next transmitter corresponds to ASM card 2; etc.
- Adjust the **Alert Tone Duration** to the desired time in seconds.
- Record the initial *Alert Tone Amplitude* slider setting in Table 8.
- Move the **Alert Tone Amplitude** slider to increase or decrease the *Alert Tone* output amplitude, as necessary, to equal 0 dBm on the AM-48 Test Set [$+ 1.2$ (± 0.5) on the ACP VU meter]. A good starting point on the *Alert Tone Amplitude* is 15.
- Click the **Save Amplitude** button to save the new DECTalk card *Amplitude* settings.

- NOTE:** 2. After the *Save Amplitude* key is clicked, the new settings replace the old values. The new DECTalk amplitude settings are downloaded to the associated DECTalk card. Downloading is instantaneous.

- Click the **Start To Send** button to start the broadcast of the Alert tone.
- Record the initial AM-48 Test Set reading in Table 8.
- Check that the measured output level of the DECTalk generated Alert tone equals 0 dBm on the AM-48 Test Set [$+ 1.2$ (± 0.5) on the ACP VU meter]. If the reading equals 0 on the AM-48 Test Set, record the final AM-48 reading and final amplitude slider setting in Table 8. Otherwise, repeat steps 10 through 14.

15. Select **EXIT PROGRAM** from the *CRS Tone Maintenance Utility* window (WRSAME Tone Generator).
16. When no other adjustments are necessary, select the **Transmitter** menu and then select **Transmitter Configure**. Select the **Transmitter** and click **Enable** in the *Status Section*. Click the **Save** hot key to change the transmitter status.

| |
|--|
| NOTE: 3. The following steps <u>must</u> be performed for CRS application versions prior to version 10. |
|--|

17. Click the **Save** hot key again. The following dialog box displays:

Do you want to re-initialize DECTalk parameters???

18. Click **OK**. The lower left of the *Transmitter Configure* window displays:

Requesting Configuration Change.

The “wristwatch” displays while the configuration changes (about 30 seconds). When completed, the lower left of the *Transmitter Configure* window displays:

Configuration Changed.

7.6.4 DECTALK Transmitter Transfer Tones Output Level Adjustment

1. Position the **ACP Channel Select** knob to correspond with the transmitter under adjustment.
2. Verify that the AM-48 Test Set is properly setup and connected to the ASM card according to section 7.2.
3. Log into the CRS application as **ADMIN** (if logged in as a different user).
4. Select the **Transmitter** menu and then select **Transmitter Configure**. Select the **Transmitter** to be used for the alignment and click **Disable** in the *Status Section*. Click the **Save** hot key to change the transmitter status.
5. Click the **Exit** hot key (the large “X” in the upper right of the display) to close the *Transmitter Configure* window.
6. Click the **Maintenance** menu and then select **WRSAME Tone Generator**.

NOTE: 1. The *Transfer Tones* operation window can be selected by clicking the **Transfer Tones** button from the *CRS Tone Maintenance Utility* window. There are two options that users can choose: "Primary to Secondary" and "Secondary to Primary." If the "Primary to Secondary" option is selected, then the program will output the primary tone followed by the secondary tone. The "Secondary to Primary" option generates tones in the reverse order. All possible data values associated with this window are as follows:

- a. The Transfer tones amplitude can be set from 1 to 99.
- b. The Transfer tones duration can be set from 1 to 30 seconds, ± 1 second.
- c. The *Save Amplitude* button is used to dynamically update the amplitude level for the selected transmitter. The amplitude is saved in the transmitter configuration and downloaded to the appropriate DECTalk card.
- d. Changing the transmitter mode from *Primary* to *Secondary* sends out an 1800 Hz tone followed by a 2400 Hz tone.
- e. Changing the transmitter mode from *Secondary* to *Primary* sends out a 2400 Hz tone followed by an 1800 Hz tone.

7. In the *Choices* section under *Transmitters*, click the desired **Transmitter** in the displayed list. The first transmitter name corresponds to ASM card 1; the next transmitter corresponds to ASM card 2; etc.
8. Adjust the **Transfer Tones** duration slider to the desired time in seconds.
9. Record the initial **Transfer Tone Amplitude** slider setting in Table 8.
10. Move the **Transfer Tones Amplitude** slider to increase or decrease the *Transfer Tones* output amplitude, as necessary, to equal 0 dBm on the AM-48 Test Set [+ 1.2 (± 0.5) on the ACP VU meter]. A good starting point on the *Alert Tone Amplitude* is **15**.
11. Click the **Save Amplitude** button to save the new DECTalk card *Amplitude* settings.

NOTE: 2. After the **Save Amplitude** key is clicked, the new settings replace the old values. The new DECTalk amplitude settings are downloaded to the associated DECTalk card. Downloading is instantaneous.

12. Click the **Start To Send** button to start the broadcast of the Transfer tone.

NOTE: 3. When monitoring a channel (NOT USING BUL) the ACP VU meter does not monitor the final output of the ASM card. The amplitude of the monitored signal (from the VU meter) is 1.2 higher than the amplitude of the final output of the ASM card (i.e., the 1050 Hz Alert Tone). When the ASM card's final output amplitude is set to 0 dBm (using the AM-48 Test Set), the VU meter reading should indicate a level of + 1.2 (± 0.5). Therefore, the VU meter can be used to measure the output level in conjunction with the AM-48 Test Set.

13. Record the initial AM-48 Test Set reading in Table 8 for both frequencies.
14. Check the measured output level of the DECTalk generated transfer tones equals 0 dBm on the AM-48 Test Set [+ 1.2 (± 0.5) on the ACP VU meter]. If the reading equals 0 on the AM-48 Test Set, record the final AM-48 reading and final amplitude slider setting in Table 8 for both frequencies. Otherwise, repeat steps 10 through 14.
15. Select **EXIT PROGRAM** from the *CRS Tone Maintenance Utility* window (WRSAME Tone Generator).
16. When no other adjustments are necessary, select the **Transmitter** menu and then select **Transmitter Configure**. Select the **Transmitter** and click **Enable** in the *Status Section*. Click the **Save** hot key to change the transmitter status.

NOTE: 4. The following steps must be performed for CRS application versions prior to version 10.

17. Click the **Save** hot key again. The following dialog box displays:
Do you want to re-initialize DECTalk parameters???
18. Click **OK**. The lower left of the *Transmitter Configure* window displays:
Requesting Configuration Change.

The "wristwatch" displays while the configuration changes (about 30 seconds). When completed, the lower left of the Transmitter Configure window displays:

Configuration Changed.

7.6.5 DECTALK Synthesized Voice Output Level Adjustment

The *Voice Amplitude* setting has no affect on the voice level output but the following procedure will set it to a nominal 25. The output is controlled by the *Volume* setting in the *Voice Parameters*, which controls the audio level output of the DECTalk card. This adjustment is for messages converted from text to speech by the DECTalk card. The amplitude of messages converted by the VIP will be adjusted in the next section.

NOTE: 1. In order to facilitate this part of the alignment, it may be necessary to have the forecast staff send a product over to be converted by DECTalk only. This alignment is crucial, because if VIP fails then DECTalk converts all messages. Also, most offices have their Station ID and Time Announcement generated by DECTalk.

1. Select the **Broadcast Cycle** window under the *Transmitter* menu from the *CRS Main Menu* (see Section 3, Figure 28, of the *Site Operator's Manual*).
2. Click the first transmitter under the **transmitters/playbacks** section (left side of window).
3. To determine which message is currently being broadcast, observe the *Transmit Time* column. The last message highlighted in green is currently being broadcast. A message converted from text to speech by the DECTalk card has the product category and specific product designator (i.e., LFPGEN 1 1 as shown in Section 3, Figure 28, of the *Site Operator's Manual*) in the *message name* column. The station ID is a good one to use. Messages converted by the VIP or recorded manually should not be used for this part of the alignment. These will be adjusted later.
4. While a DECTalk converted message is playing, check the ACP VU meter to ensure that the peak deflection is approximately 0 ± 2 . Record the initial reading in Table 8. The VIP level will be adjusted in section 7.6.6.
5. Click the **Transmitters** menu then select the **Transmitter Configure** window (see Section 3, Figure 21, of the *Site Operator's Manual*).
6. Click **Amplitudes**.
7. Move the **Voice Amplitude** slider to **25**. (Has no effect on output level.)
8. Click the **OK** button to return to the *Transmitter Configure* window.
9. Click **Voice Parameters**.
10. Check the *Volume* slider. Record the initial reading in Table 8.
11. If the measurement requires adjustment, go to step 12. Otherwise, record the final VU meter reading in Table 8 and go to section 7.6.6.
12. Adjust the **Volume** slider to increase or decrease the output level (**25** is a good starting point).
13. Click the **Save** hot key to save the new DECTalk synthesized voice amplitudes.

NOTE: 2. Clicking the **Save hot** key, downloads the new DECtalk amplitude settings to the associated DECtalk card and replaces the old values. Downloading time can range from one to several minutes depending on the size of the current broadcast message. The downloading process does not start until the end of the current broadcast message is reached.

14. Check the VU meter to ensure that the peak deflection is approximately 0 ± 2 . Record the final VU meter reading in Table 8.
15. If the measurement requires adjustment, repeat steps 12 through 14. Only the Volume slider control needs to be adjusted.
16. The DECtalk card output level adjustment procedures in sections 7.6.2, 7.6.3, 7.6.4, and 7.6.5 MUST be performed on each and every DECtalk card output channel in the CRS. Remember, ACP channel select 1 corresponds to ASM card 1 and transmitter 1; channel select 2 corresponds to ASM card 2 and transmitter 2; etc.

7.6.6 VIP Converted Files Amplitude/Volume Adjustment to Match DECtalk Synthesized Voice Output Level

The ability to adjust the volume and rate/speed of the individual English male and female and the Spanish male converted audio files sent back to CRS was added in build 3.0.1. A *Volume Control* slide bar and a *Rate/Speed Control* slide bar are located within the *System Settings* interface for each voice type. The version 3.0.1 setting (-4 dB attenuation relative to the amplitude created by the down sample routine) is the default setting. It is also important to note that *Volume Control* and *Rate/Speed Control* adjustments only affect CRS Audio (.Pv) files sent back to CRS and also affect the individual male and female voice types used.

NOTE: 1. The following procedure must be accomplished for each voice type (Tom, Donna, and Javier).

1. Select the **Broadcast Cycle** window under the *Transmitter* menu from the *CRS Main Menu* (see Section 3, Figure 28, of the *Site Operator's Manual*).
2. Click the **first transmitter** under the *transmitters/playbacks* section (left side of window).
3. To determine which message and voice type is currently being broadcast, observe the *Transmit Time* column. The last message highlighted in green is currently being broadcast. If the *Message Name* column has *VIP ID* in the name, it was converted by the VIP. Listen to the message being played to determine what voice type is being used.
4. While a VIP message is playing, check the ACP VU meter to ensure that the peak deflection is approximately 0 ± 2 . Record the initial ACP VU meter reading in Table 8 for the appropriate voice type.

5. If the measurement requires adjustment, then go to step 6. Otherwise, record the final VU meter value in Table 8 and go to step 13.
6. On the VIP, select the **System Settings** button from the *VIP Main Menu*. The *System Settings* window displays.
7. If the VIP Application is running, a message window displays stating “NOTE: VIP is running. Any changes won’t take hold until you press stop, then start on the main interface.” Click **OK** to acknowledge the message.
8. Record initial values of volume sliders for all voice types in Table 8.
9. Use the slide bar under the appropriate voice type to increase or decrease the amplitude of the .Pv file (this file is sent from VIP to Master MP). This only affects new messages of that voice type processed by the VIP computer.
10. Click **Save and Exit** on the *System Settings* window. This closes the window.
11. On the *VIP Main Menu*, click **stop**, and then click **start** to restart the VIP application.
12. Resend a product that is designated for conversion by VIP from AWIPS to CRS. Check the *Broadcast Cycle* on CRS to determine when the new message is playing. While the new message is playing, check the ACP VU meter to ensure that the peak deflection is approximately 0 ± 2 .
13. If the measurement requires adjustment, then repeat steps 6 through 12. Otherwise, record the final VU meter value for that voice type. Record final values of volume sliders for all voice types in Table 8 and go to step 14.
14. If necessary, repeat steps 1 through 13 for all appropriate voice types for your location. The VIP audio level adjustment affects only one of the voice types. This adjustment must match the *DECTalk Synthesized Voice Output Level* and the VIP converted files amplitude/volume.

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| <p>NOTE: 2. At the completion of the Alignment procedures, disconnect the test equipment and return the system to normal operation.</p> |
|--|

Table 8. CRS System Alignment Measurements

Site: _____ **ASM Card #:** _____ **Date:** _____

| Note: Sections 7.4.1, 7.4.3, & 7.6.9 adjustments only need to be performed for ASM card #1 | | | | | |
|---|-----------------------------|-------------|-------------------------|---------------|-------------------------|
| | Before Adjustment (Initial) | | | Final Reading | |
| Section: Step # | Function | Level (dBm) | Amplitude (CRS Slider) | Level (dBm) | Amplitude (CRS Slider) |
| 7.4.1: 3, 9 | Ref. Mark | N/A | On Above Below Mark | N/A | On Above Below Mark |
| 7.4.2: 5, 7 | BUL WAT 1050 Hz | 5 | N/A | 7 | N/A |
| 7.4.2: 9 | BUL SW 1 1800 Hz | N/A | N/A | 9 | N/A |
| 7.4.2: 11 | BUL SW 2 2400 Hz | N/A | N/A | 11 | N/A |
| 7.4.3: 6 | BUL SAME 1562+2052 | 6 | N/A | 6 | N/A |
| 7.6.2: 6, 10, 11 | CRS SAME 1562+2052 | 10 | 6 | 11 | 11 |
| 7.6.3: 6, 10, 11 | CRS WAT 1050 Hz | 10 | 6 | 11 | 11 |
| 7.6.4: 6, 10, 11 | CRS SW 1 1800 Hz | 10 | 6 | 11 | 11 |
| 7.6.4: 6, 10, 11 | CRS SW 2 2400 Hz | 10 | 6 | 11 | 11 |
| 7.6.5: 4, 10, 11, 14 | CRS Voice Volume | 4 | 10 | 11/14 | 11 |
| 7.6.6: 4, 5, 8, 13, 14 | CRS VIP Male Eng. | 4 | 8/13 | 5/13 | 13 |
| 7.6.6: 4, 5, 8, 13 | CRS VIP Female Eng. | 4 | 8/13 | 5/13 | 13 |
| 7.6.6: 4, 5, 8, 13 | CRS VIP Spanish | 4 | 8/13 | 5/13 | 13 |

ATTACHMENT B

CRS Hardware Drawings

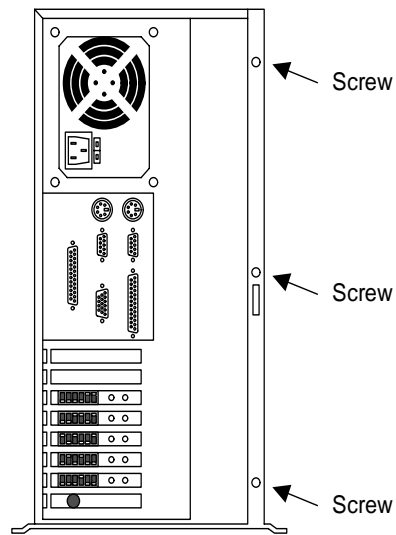
Figure B-1.Main Processors and Front-end Processors—Cover Removal

Figure B-2.Front-end Processors—Rear View

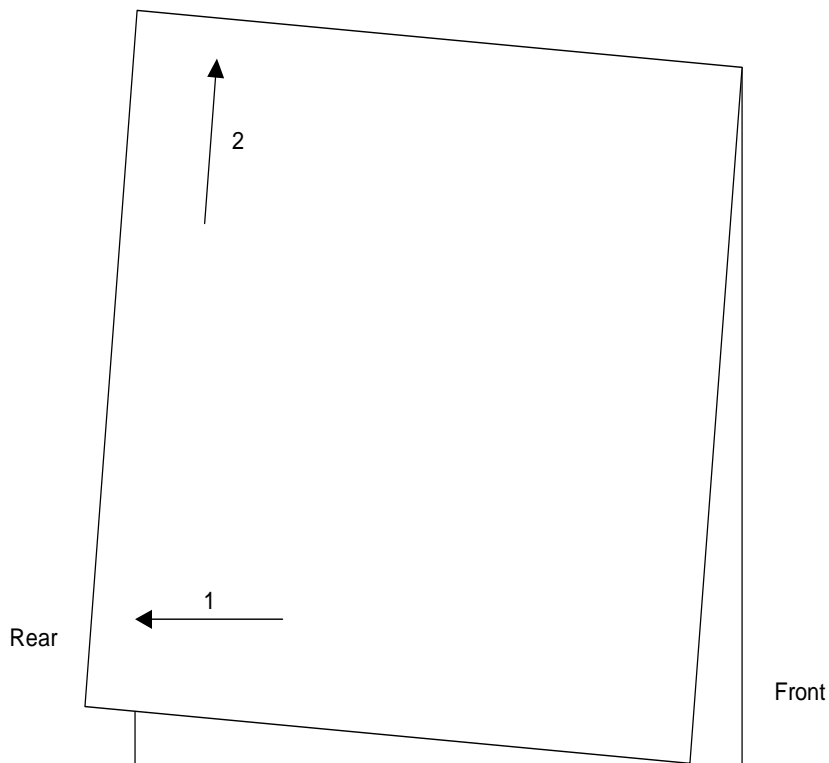
Figure B-3.DECtalk Card Switch 2 Settings for I/O Addresses

Figure B-4.Main Processors and Front-End Processors (side panel removed)

Figure B-5.LAN Cable Distribution Scheme



Remove the mounting screws located on the back of the processors



To remove the cover, push the cover backward and pull it upward

Figure B-1. Main Processors and Front-end Processors—Cover Removal

Front-End Processor (rear view)

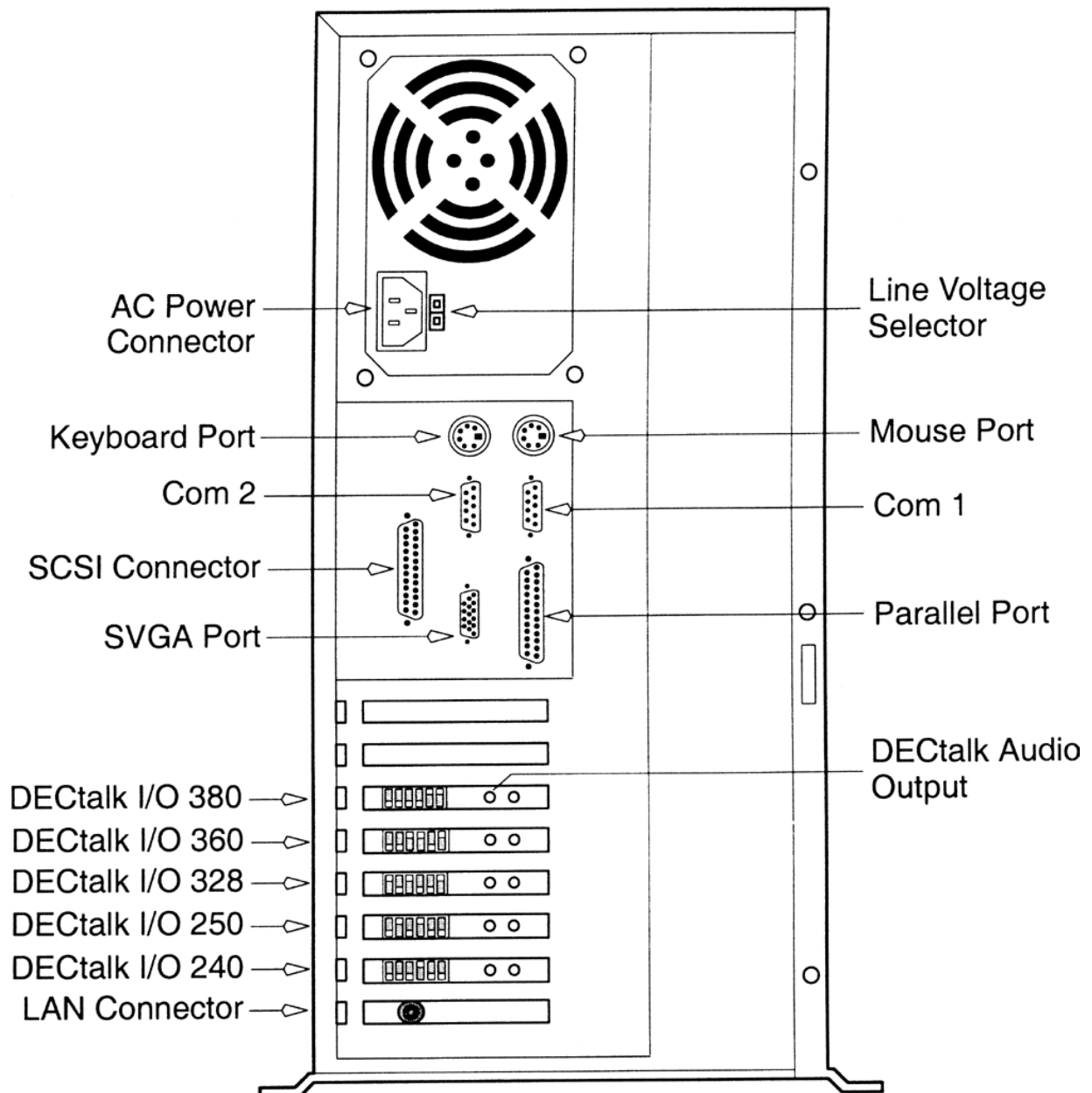


Figure B-2. Front-end Processors—Rear View

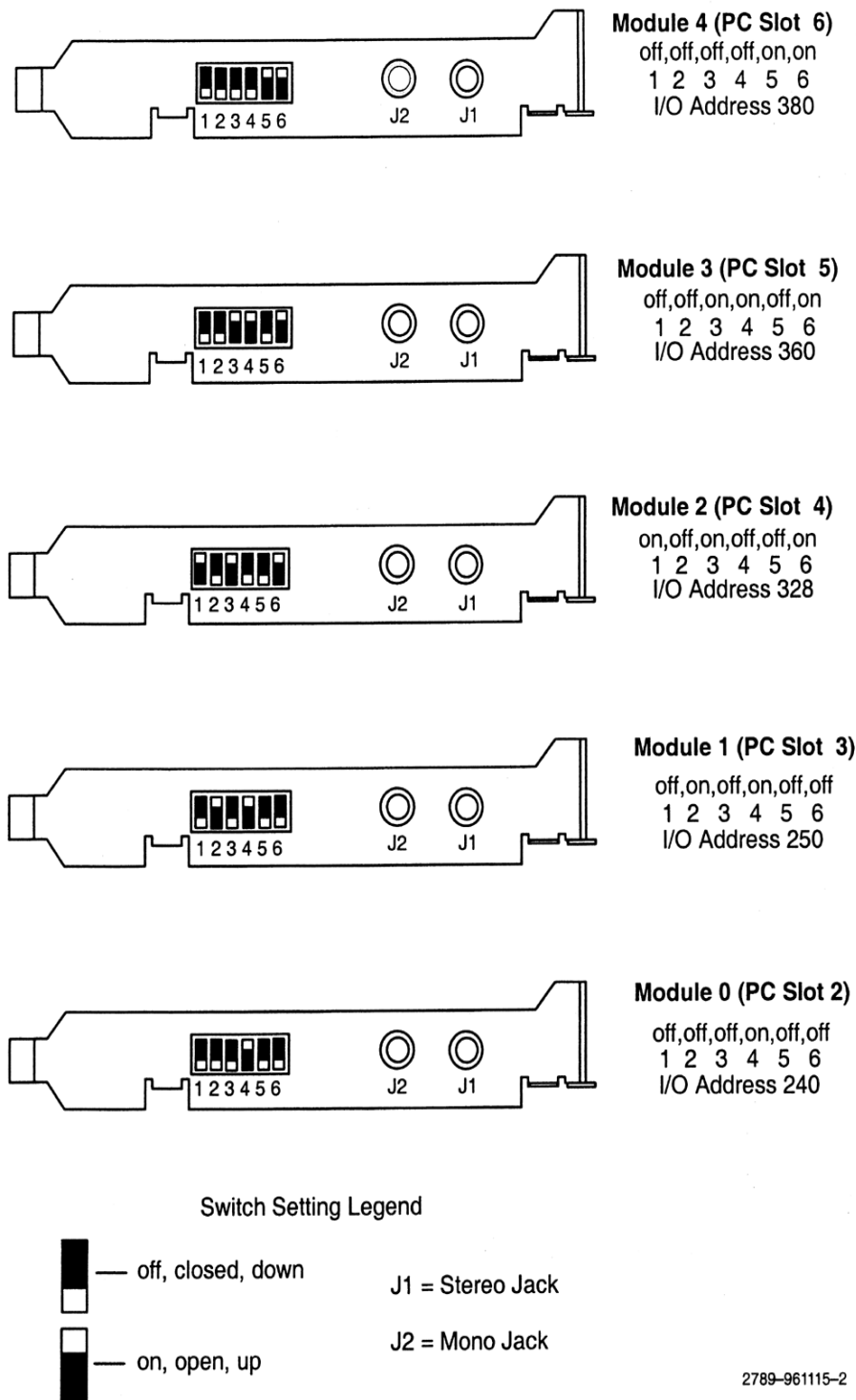


Figure B-3. DECtalk Card Switch 2 Settings for I/O Addresses

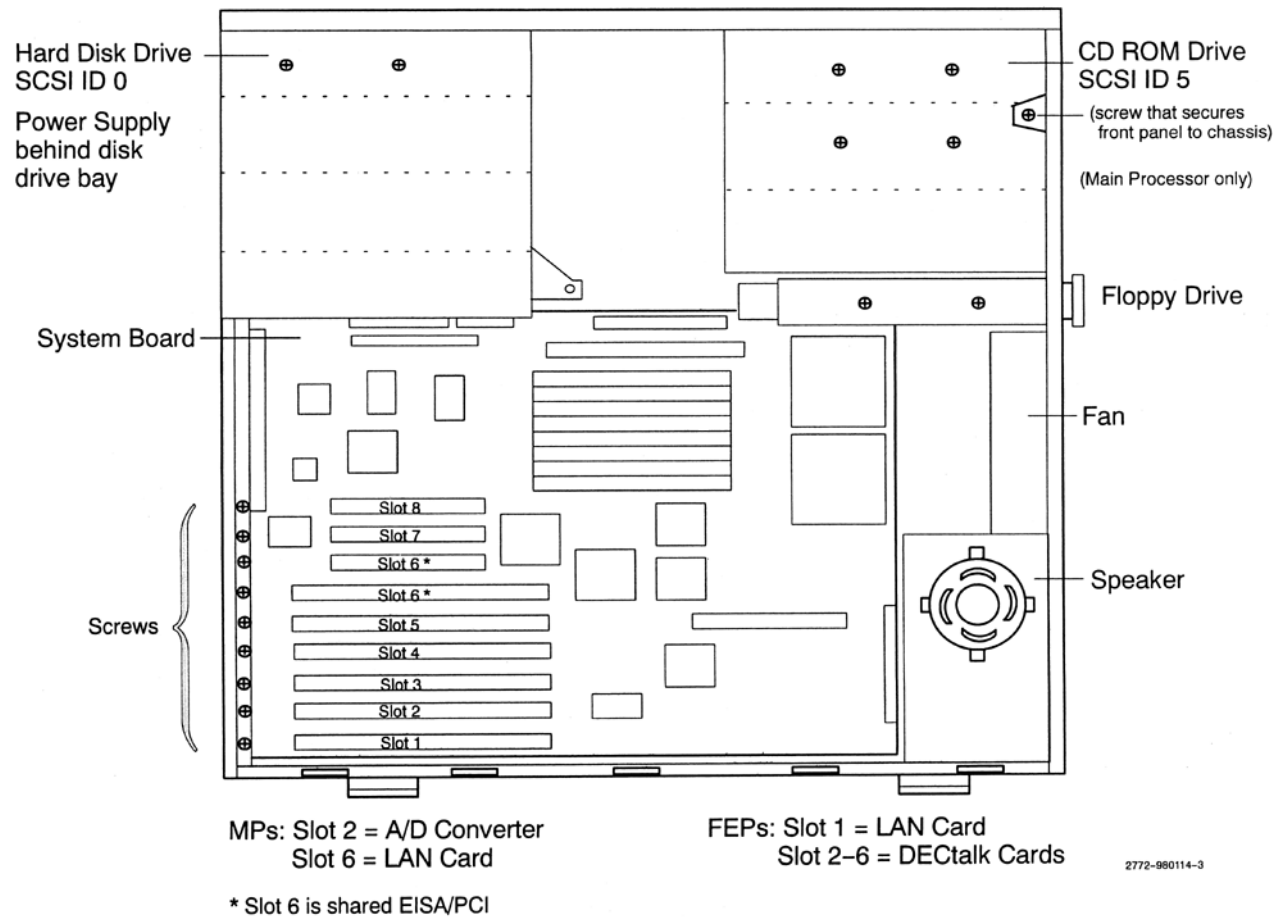


Figure B-4. Main Processors and Front-End Processors (side panel removed)

FEP1 & Backup FEP = Typical Configuration
 FEP1, FEP2 & Backup FEP = Large Configuration
 FEP1, FEP2, FEP3 & Backup FEP = Maximum Configuration

The LAN Bridge is a dual port AUI device. A contractor provided AUI/BNC transceiver is used to connect to the CRS LAN.
 The second port is for connection to the AWIPS LAN using a contractor provided AUI/TP transceiver.

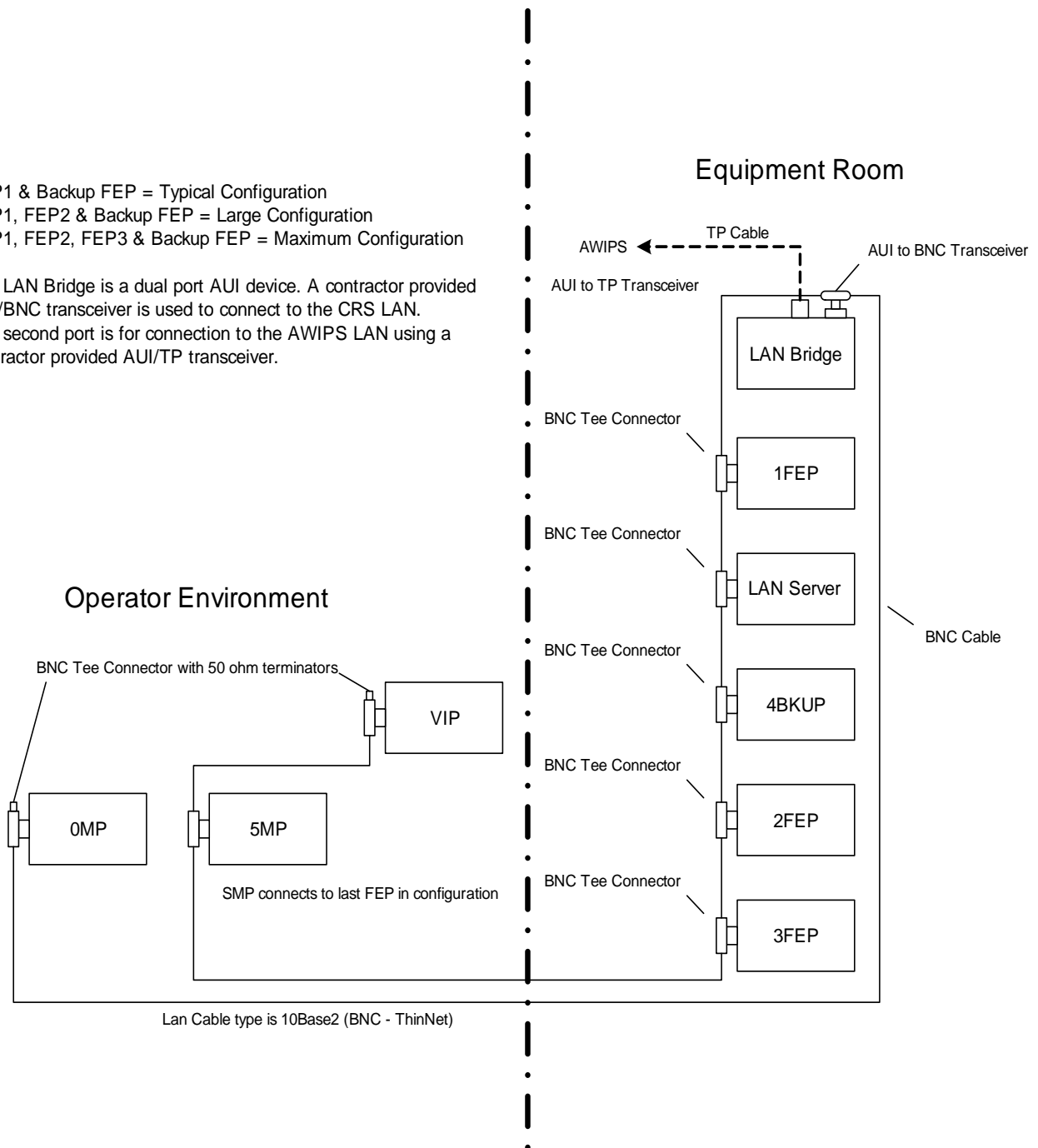


Figure B-5. LAN Cable Distribution Scheme

ATTACHMENT C

New Configuration Physical Verification

Maximum 9-Channel System

Required MPs, FEPs, DECtalks, ASC, and ASMs

The **Maximum 9-channel** system has 2 MPs (0MP and 5MP), 4 FEPs (1FEP, 2FEP, 3FEP, and 4BKUP), 15 DECtalk cards, 1 ASC card, and 12 ASM cards:

| | | | |
|-------|----------------------------|----------------------------|------------|
| 0MP | main processor 1 | | |
| 5MP | main processor 2 | | |
| 1FEP | front-end processor 1 | | |
| | LAN Card | LAN interface | (slot 1) |
| | DECtalk 1 | channel 1 | (slot 2) |
| | DECtalk 2 | channel 2 | (slot 3) |
| | DECtalk 3 | channel 3 | (slot 4) |
| | DECtalk 5 | PB1 | (slot 6) |
| 2FEP | front-end processor 2 | | |
| | LAN Card | LAN interface | (slot 1) |
| | DECtalk 1 | channel 4 | (slot 2) |
| | DECtalk 2 | channel 5 | (slot 3) |
| | DECtalk 3 | channel 6 | (slot 4) |
| | DECtalk 5 | PB2 | (slot 6) |
| 3FEP | front-end processor 3 | | |
| | LAN Card | LAN interface | (slot 1) |
| | DECtalk 1 | channel 7 | (slot 2) |
| | DECtalk 2 | channel 8 | (slot 3) |
| | DECtalk 3 | channel 9 | (slot 4) |
| 4BKUP | backup front-end processor | | |
| | LAN Card | LAN interface | (slot 1) |
| | DECtalk 1 | backup channel 1, 4, or 7 | (slot 2) |
| | DECtalk 2 | backup channel 2, 5, or 8 | (slot 3) |
| | DECtalk 3 | backup channel 3, 6, or 9 | (slot 4) |
| | DECtalk 5 | backup PB1, or PB2 | (slot 6) |
| ASA | audio switch assembly | | |
| ASC | audio switch controller | | |
| | ASM 1 | channel 1 | (slot 1) |
| | ASM 2 | channel 2 | (slot 2) |
| | ASM 3 | channel 3 | (slot 3) |
| | ASM 4 | channel 4 | (slot 4) |
| | ASM 5 | channel 5 | (slot 5) |
| | ASM 6 | channel 6 | (slot 6) |
| | ASM 7 | channel 7 | (slot 7) |
| | ASM 8 | channel 8 | (slot 8) |
| | ASM 9 | channel 9 | (slot 9) |
| | ASM PB1 | monitor/playback channel 1 | (slot PB1) |
| | ASM PB2 | monitor/playback channel 2 | (slot PB2) |
| | ASM Spare | spare | (slot S) |

DECtalk Card Configurations

There is one I/O jumper to be set on each DECtalk card:

| | FEP Name | FEP Slot # | I/O Address Jumper |
|---|----------|------------|--------------------|
| 1FEP DECtalk 1 (channel 1) | 1FEP | 2 | 240 |
| 1FEP DECtalk 2 (channel 2) | 1FEP | 3 | 250 |
| 1FEP DECtalk 3 (channel 3) | 1FEP | 4 | 328 |
| 1FEP DECtalk 5 (mon/playback chan 1) | 1FEP | 6 | 380 |
| 2FEP DECtalk 1 (channel 4) | 2FEP | 2 | 240 |
| 2FEP DECtalk 2 (channel 4) | 2FEP | 3 | 250 |
| 2FEP DECtalk 3 (channel 6) | 2FEP | 4 | 328 |
| 2FEP DECtalk 5 (mon/playback chan 2) | 2FEP | 6 | 380 |
| 3FEP DECtalk 1 (channel 7) | 3FEP | 2 | 240 |
| 3FEP DECtalk 2 (channel 8) | 3FEP | 3 | 250 |
| 3FEP DECtalk 3 (channel 9) | 3FEP | 4 | 328 |
| 4BKUP DECtalk 1 | 4BKUP | 2 | 240 |
| 4BKUP DECtalk 2 | 4BKUP | 3 | 250 |
| 4BKUP DECtalk 3 | 4BKUP | 4 | 328 |
| 4BKUP DECtalk 5 | 4BKUP | 6 | 380 |

ASM Card Configurations

There are five jumpers to be set on each ASM card:

| | ASA Slot # | Silence Alarm Jumper "JP1" | ACP Channel Select Jumper "JP2" & "JP3" | BKUP Live/ Playback Cntrl Jumper "JP4" | FEP Select Jumper "JP5" |
|----------------------------------|------------|----------------------------|---|--|-------------------------|
| ASM 1 (channel 1) | 1 | EN (Enable) | 1 | BUL2 | 1FEP |
| ASM 2 (channel 2) | 2 | EN (Enable) | 2 | BUL2 | 1FEP |
| ASM 3 (channel 3) | 3 | EN (Enable) | 3 | BUL2 | 1FEP |
| ASM 4 (channel 4) | 4 | EN (Enable) | 4 | BUL2 | 2FEP |
| ASM 5 (channel 5) | 5 | EN (Enable) | 5 | BUL2 | 2FEP |
| ASM 6 (channel 6) | 6 | EN (Enable) | 6 | BUL2 | 2FEP |
| ASM 7 (channel 7) | 7 | EN (Enable) | 7 | BUL2 | 3FEP |
| ASM 8 (channel 8) | 8 | EN (Enable) | 8 | BUL2 | 3FEP |
| ASM 9 (channel 9) | 9 | EN (Enable) | 9 | BUL2 | 3FEP |
| ASM PB1 (mon/playback chan 1) | PB1 | DIS (Disable) | PB1 | PB | 1FEP |
| ASM PB2 (mon/playback chan 2) | PB2 | DIS (Disable) | PB2 | PB | 2FEP |

ASC Card Configuration

Refer to figure 1. On both the operational and spare ASC, set the backup channel configuration by positioning the seven jumpers on JP1. Using all seven jumpers, move the jumpers to the side of the block that lists the number of output channels for your site configuration (the center row of pins is common). For example, if your site has 5, 6, 9, or 10 channels, connect each jumper from the center pin to the top pin; if your site has 1, 2, 3, 4, 7, 8, 11, 12, or 13 channels, connect each jumper from the center pin to the bottom pin.

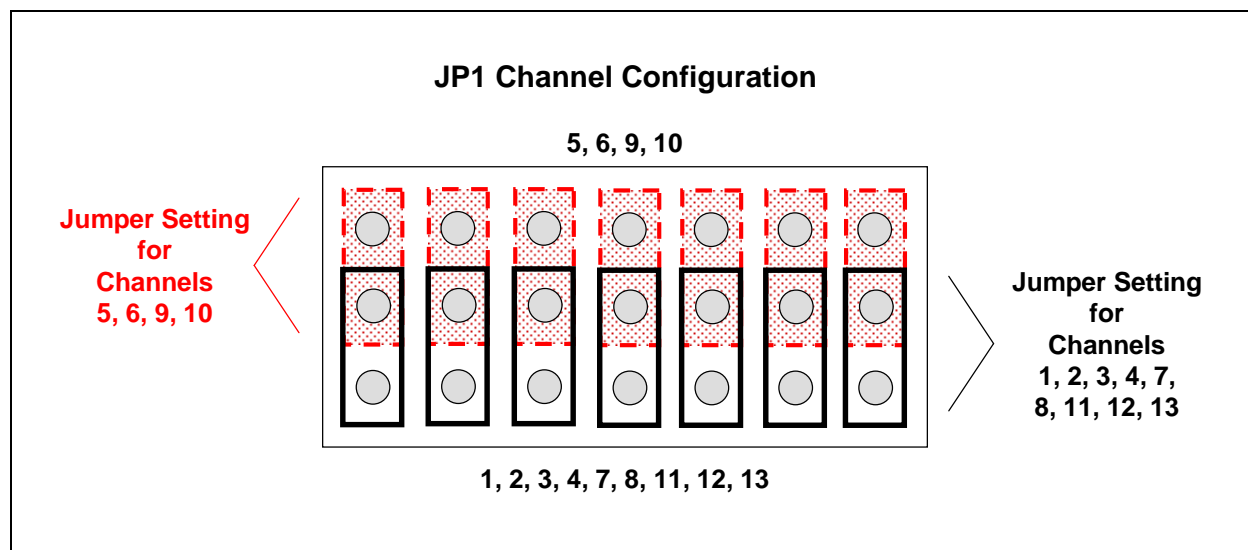


Figure 1. ASC Card Jumper Block

Cable Label Between DECtalk Card and ASM Card

| From | To | Cable Label |
|--------------------------|-------------------|-------------|
| 1FEP DECtalk 1 "J2" Port | ASM 1 "IN Port" | 1-1 |
| 1FEP DECtalk 2 "J2" Port | ASM 2 "IN Port" | 1-2 |
| 1FEP DECtalk 3 "J2" Port | ASM 3 "IN Port" | 1-3 |
| 2FEP DECtalk 1 "J2" Port | ASM 4 "IN Port" | 2-1 |
| 2FEP DECtalk 2 "J2" Port | ASM 5 "IN Port" | 2-2 |
| 2FEP DECtalk 3 "J2" Port | ASM 6 "IN Port" | 2-3 |
| 3FEP DECtalk 1 "J2" Port | ASM 7 "IN Port" | 3-1 |
| 3FEP DECtalk 2 "J2" Port | ASM 8 "IN Port" | 3-2 |
| 3FEP DECtalk 3 "J2" Port | ASM 9 "IN Port" | 3-3 |
| 1FEP DECtalk 5 "J2" Port | ASM PB1 "IN Port" | 1-5 |
| 2FEP DECtalk 5 "J2" Port | ASM PB2 "IN Port" | 2-5 |

Cable Label Between DECtalk Card and ASC Card

| From | To | Cable Label |
|---------------------------|-------------------------|-------------|
| 4BKUP DECtalk 1 "J2" Port | ASC "BKUP Audio 1" Port | 4-1 |
| 4BKUP DECtalk 2 "J2" Port | ASC "BKUP Audio 2" Port | 4-2 |
| 4BKUP DECtalk 3 "J2" Port | ASC "BKUP Audio 3" Port | 4-3 |
| 4BKUP DECtalk 5 "J2" Port | ASC "BKUP Audio 5" Port | 4-5 |

ATTACHMENT D

Sample EMRS Report

A26 Detail Form - ESCM2, SILVER SPRING, MD :: JOHN MERHI - Microsoft Internet Explorer

New A26 Commit A26 Place on Hold Copy A26 Delete A26 Detail Report Document Summary Help

GENERAL INFORMATION

NEW RECORD WFO* BYZ Document No.* BYZ41104000

1. Open Date: 11/04/2004 Open Time: 08:00 2. Op Initials: WSH 3. Response Priority: ☐ Immediate ☐ Low ☐ Routine ☒ Not Applicable 4. Close Date: 11/04/2004 Close Time: 11:00

5. Maintenance Description: 429 characters left NWR/CRS
Expand CRS from a Large 7-channel to a Maximum 10-channel configuration

EQUIPMENT INFORMATION

6. Station ID*: BYZ 7. Equipment Code: CRSSA 8. Serial Number: 001 9. TM: M 10. AT: M 11. How Mal: 999

Alert: Time Remaining: (For Block 12 use only)

13. PARTS USAGE and CONFIGURATION MANAGEMENT REPORTING

| ASN | Vendor Part No. (New Part) | Serial Number (Old Part) | Serial Number (New Part) | |
|----------|----------------------------|--------------------------|--------------------------|---|
| B440-2A2 | | N/A | NEW FEP SERIAL # HERE | <input type="button" value="New Row"/> <input type="button" value="Delete Row"/> |

14. WORKLOAD INFORMATION

| a. Routine | b. Non-Routine | c. Travel | d. Misc | e. Overtime |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Hours Minutes | Hours Minutes | Hours Minutes | Hours Minutes | Hours Minutes |
| | | | 2 | |

MISCELLANEOUS INFORMATION

15. Maintenance Comments: 633 characters left
Installed an FEP, 1 DECTalk card and 2 ASM cards to expand CRS from an L7 to an M9, I.A.W. CRS Mod Note 38A, Errata 3

16. Tech Initials: FAB

17. SPECIAL PURPOSE REPORTING INFORMATION

| a. Mod No. | b. Mod Act/Deact Date | c. Block C | d. Trouble Ticket No. | e. Block E |
|------------|-----------------------|------------|-----------------------|------------|
| 38A | 11/04/2004 | | | |

Commit A26 Place on Hold Copy A26 New A26 Cancel

Done Internet